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## TRAINING WORKBOOK

# **Administration and Scoring of Mathematics Computation Curriculum-Based Measurement (M-CBM) and Math Fact Probes for Use with AIMSweb**

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This manual is to be used as a supplement to the **AIMSweb M-CBM Power Point Training Presentation**.

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# The Mathematics Computation Curriculum-Based Measurement (M-CBM)

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Computational skill is critical for mathematics success. According to the National Research Council (NRC, 2001), mathematics is comprised of five intertwined strands of proficiency, including procedural fluency, skill in carrying out procedures flexibly, accurately, efficiently, and appropriately. According to the NRC, “students need to be efficient and accurate in performing basic computation with whole numbers” (p. 121). Furthermore, students must learn to “use an algorithm for computation with multi-digit numbers because it is an important part of developing mathematical proficiency” (p. 7).

Assessment of mathematic skills is typically accomplished by giving students a commercial broad-band achievement test that samples a wide range of types of computation problems, but has very few problems of any particular type. Combined with the fact that these types of math tests typically have only one form, it is difficult to reliably identify which types of problems student can do correctly, and importantly, to monitor the effectiveness of math interventions by monitoring progress frequently. Math-Curriculum-Based Measurement (M-CBM) Probes are designed to resolve these problems by providing educators narrow-band tests (lots of items across a limited grade-level or type of math computation problem) that are simple to administer and score, that are time-efficient, and that are sensitive to improvement.

M-CBM is part of a type of measurement called Curriculum-Based Measurement (CBM). CBM was developed more than 25 years ago, by educational scientists headed by Stanley Deno, Ph.D. at the University of Minnesota as his research team sought to identify reliable and valid ways of assessing students’ progress in the basic skill areas of reading, spelling, written expression, and mathematics computation.

Science-based research (Marston, 1989; Thurber & Shinn, 2002) has shown that having students write answers to grade-level computational problems story for 2-4 minutes is a reliable and valid general outcome measure of general mathematics computation for typically achieving students through Grade 6 and for students with severe math problems.

AIMSweb provides M-CBM probes based on expected computational skills for Grades 1-6 with 40 alternate forms per grade for use in Benchmark Assessment, Strategic Monitoring, and frequent Progress Monitoring. Each probe has 2 pages of computational problems printed front and back that are arrayed in rows. A portion of a Grade 2 M-CBM probe is shown on the following page.

## Sample Grade 2 M-CBM Probe

Student Name: _____		Grade: _____		Teacher Name: _____	
$\begin{array}{r} 7 \\ + 8 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ + 5 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ + 1 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ + 0 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ - 0 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ - 3 \\ \hline \end{array}$
$\begin{array}{r} 61 \\ - 50 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ - 0 \\ \hline \end{array}$	$\begin{array}{r} 92 \\ - 62 \\ \hline \end{array}$	$\begin{array}{r} 98 \\ + 2 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ 4 \\ + 9 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ + 1 \\ \hline \end{array}$
$\begin{array}{r} 8 \\ - 4 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ + 6 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ - 3 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ - 0 \\ \hline \end{array}$	$\begin{array}{r} 84 \\ - 71 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ + 61 \\ \hline \end{array}$

Students write their answers to these computational problems under standardized conditions and timeframes that are dependent on the students' grade. M-CBM can be administered to students individually and in small and class-size groups when there is careful monitoring of students' participation.

M-CBM probes are administered for 2-4 minutes depending on the grade-level of the assessment materials. For M-CBM probes Grades 4-6, students are given 4 minutes to complete as many problems as they can because the problems are more complex in terms of the required skills and algorithms required for success.

Consistent with other CBM assessment methods, an emphasis is placed on what students do correctly. M-CBM probes are scored by counting the number of Correct Digits (CD) the student writes. For each probe, there is a scoring key with the number of digits possible in the row and in a cumulative count. A portion of a sample Grade 2 answer key, scored for Correct Digits (CD), is shown on the next page.

## Sample Grade 2 M-CBM Probe Answer Key

$\begin{array}{r} 7 \\ + 8 \\ \hline 15 \end{array}$ (2)	$\begin{array}{r} 5 \\ + 5 \\ \hline 10 \end{array}$ (2)	$\begin{array}{r} 7 \\ + 1 \\ \hline 8 \end{array}$ (1)	$\begin{array}{r} 7 \\ + 0 \\ \hline 7 \end{array}$ (1)	$\begin{array}{r} 7 \\ - 0 \\ \hline 7 \end{array}$ (1)	$\begin{array}{r} 4 \\ - 3 \\ \hline 1 \end{array}$ (1)	8 (8)
$\begin{array}{r} 61 \\ - 50 \\ \hline 11 \end{array}$ (2)	$\begin{array}{r} 8 \\ - 0 \\ \hline 8 \end{array}$ (1)	$\begin{array}{r} 92 \\ - 62 \\ \hline 30 \end{array}$ (2)	$\begin{array}{r} 98 \\ + 2 \\ \hline 100 \end{array}$ (3)	$\begin{array}{r} 1 \\ 4 \\ + 9 \\ \hline 14 \end{array}$ (2)	$\begin{array}{r} 2 \\ + 1 \\ \hline 3 \end{array}$ (1)	11 (19)
$\begin{array}{r} 8 \\ - 4 \\ \hline 4 \end{array}$ (1)	$\begin{array}{r} 13 \\ + 6 \\ \hline 19 \end{array}$ (2)	$\begin{array}{r} 4 \\ - 3 \\ \hline 1 \end{array}$ (1)	$\begin{array}{r} 1 \\ - 0 \\ \hline 1 \end{array}$ (1)	$\begin{array}{r} 84 \\ - 71 \\ \hline 13 \end{array}$ (2)	$\begin{array}{r} 13 \\ + 61 \\ \hline 74 \end{array}$ (2)	9 (28)

When using Grades 5-6 M-CBM probes, the number of CD can be counted in two ways, (a) the number of CD written in **answer only**, or (b) the number of CD in the **answer only and critical processes** of solving the problem. Educators are provided a choice of scoring methods that may best fit their mathematics curriculum approach. Compare how the first 2 rows of the Grade 5 M-CBM probe below would be scored.

$1\overline{)4}$	$5\overline{)35}$	$6\overline{)6}$	$\begin{array}{r} 0 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 75 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 5 \\ \hline \end{array}$
$\begin{array}{r} 8775 \\ 1688 \\ + 3640 \\ \hline \end{array}$	$\begin{array}{r} 585 \\ 7899 \\ 9633 \\ + 6842 \\ \hline \end{array}$	$\begin{array}{r} 57 \\ \times 95 \\ \hline \end{array}$	$\begin{array}{r} 360 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 69 \\ + 14 \\ \hline \end{array}$	$9\overline{)219}$

The first answer key, based on CD in the **answer only** results in 31 CD possible in the first 2 rows.

$\begin{array}{r} 4 \\ 1 \overline{)4} \\ (1) \end{array}$	$\begin{array}{r} 7 \\ 5 \overline{)35} \\ (1) \end{array}$	$\begin{array}{r} 1 \\ 6 \overline{)6} \\ (1) \end{array}$	$\begin{array}{r} 0 \\ \times 3 \\ \hline 0 \\ (1) \end{array}$	$\begin{array}{r} 75 \\ \times 1 \\ \hline 75 \\ (2) \end{array}$	$\begin{array}{r} 4 \\ \times 5 \\ \hline 20 \\ (2) \end{array}$	8 (8)
$\begin{array}{r} 8775 \\ 1688 \\ + 3640 \\ \hline 14103 \\ (5) \end{array}$	$\begin{array}{r} 585 \\ 7899 \\ 9633 \\ + 6842 \\ \hline 24959 \\ (5) \end{array}$	$\begin{array}{r} 57 \\ \times 95 \\ \hline 5415 \\ (4) \end{array}$	$\begin{array}{r} 360 \\ \times 9 \\ \hline 3240 \\ (4) \end{array}$	$\begin{array}{r} 69 \\ + 14 \\ \hline 83 \\ (2) \end{array}$	$\begin{array}{r} 24 \text{ r } 3 \\ 9 \overline{)219} \\ (3) \end{array}$	23 (31)

The first two rows of the second answer key, based on the number of CD in the **answer only and critical processes**, would result in a possible score of 44 CD if the student answered all problems correctly.

$\begin{array}{r} 4 \\ 1 \overline{)4} \\ (1) \end{array}$	$\begin{array}{r} 7 \\ 5 \overline{)35} \\ (1) \end{array}$	$\begin{array}{r} 1 \\ 6 \overline{)6} \\ (1) \end{array}$	$\begin{array}{r} 0 \\ \times 3 \\ \hline 0 \\ (1) \end{array}$	$\begin{array}{r} 75 \\ \times 1 \\ \hline 75 \\ (2) \end{array}$	$\begin{array}{r} 4 \\ \times 5 \\ \hline 20 \\ (2) \end{array}$	8 (8)
$\begin{array}{r} 8775 \\ 1688 \\ + 3640 \\ \hline 14103 \\ (5) \end{array}$	$\begin{array}{r} 585 \\ 7899 \\ 9633 \\ + 6842 \\ \hline 24959 \\ (5) \end{array}$	$\begin{array}{r} 57 \\ \times 95 \\ \hline 285 \\ 513 \\ \hline 5415 \\ (10) \end{array}$	$\begin{array}{r} 360 \\ \times 9 \\ \hline 3240 \\ (4) \end{array}$	$\begin{array}{r} 69 \\ + 14 \\ \hline 83 \\ (2) \end{array}$	$\begin{array}{r} 24 \text{ r } 3 \\ 9 \overline{)219} \\ 18 \\ \hline 39 \\ 36 \\ \hline 3 \\ (10) \end{array}$	36 (44)

A summary of the M-CBM test administration time, testing arrangements, and scoring systems by the grade-level of the M-CBM probe is presented in the following table.

Grade M-CBM Probe	Timing	Test Arrangements	What is Scored
1 - 3	2 minutes	Individual, small or large group	Correct digits in answer
4	4 minutes	Individual, small or large group	Correct digits in answer
5 - 6	4 minutes	Individual, small or large group	Correct digits in answer or Correct digits in answer and critical process

## Constructing the M-CBM Grade-Level Probes

For each grade, types of computational problems representing an annual grade-level curriculum were identified and were weighted proportionally through a rational analysis of computational objectives. The types of problems and their weighted proportions are included in the Appendix. Following the specification of problem types and weightings, a prototype grade-level M-CBM probe was constructed that fixed the order of the problem types so that each probe would have an identical set of ordered problems. That is, if the Grade 4 M-CBM prototype probe had a basic multiplication fact problem (e.g.,  $4 \times 4$ ) as the first problem, ALL Grade 4 M-CBM probes would begin with a basic multiplication fact problem. If the second problem were a multi-digit addition problem up to 3 digits with or without re-grouping (e.g.,  $234 + 77$ ), then ALL Grade 4 M-CBM probes would have a multi-digit addition problem up to 3 digits with or without re-grouping as the second problem.

## AIMSweb Math Fact Probes

To help educators in instructional planning and short-term progress monitoring, specific Math Fact Probes can be useful. AIMSweb provides a variety of Math Fact Probes for these purposes. Each probe has 2 pages of fact problems printed front and back arrayed in 6 rows with 7 problems in each row. All probes are based on number families 0-12. For example, addition facts range from  $0 + 0$  to  $12 + 12$ ; Multiplication facts range from  $0 \times 0$  to  $12 \times 12$ . Subtraction facts range from  $0 - 0$  to  $24 - 12$  and division facts range from  $0 / 0$  to  $144 / 12$ . Depending on the diagnostic instructional planning or progress monitoring needs of the student, these fact families can be combined in a number of ways, from single skill facts to a mixture of different types of facts. All probes are administered for 2 minutes and are scored by counting the number of Correct Digits (CD) in the answer. For each probe, there is a scoring key with the number of digits possible in the row and in a cumulative count. The 7 types of AIMSweb fact probes, the time of test administration, possible testing arrangements, and scoring system is shown in the table on the next page.

## AIMSweb Math Fact Probes

Content of Facts Probe	Timing	Test Arrangements	What is Scored
Addition Fact Families 0-12 (0+0 to 12+12)	2 minutes	Individual, small or large group	Correct digits in answer
Subtraction Fact Families 0-12 (0-0 to 12-12)	2 minutes	Individual, small or large group	Correct digits in answer
Addition and Subtraction Fact Families 0-12	2 minutes	Individual, small or large group	Correct digits in answer
Multiplication Fact Families 0-12 (0+0 to 12+12)	2 minutes	Individual, small or large group	Correct digits in answer
Division Fact Families 0-12 (0/0 to 144/12)	2 minutes	Individual, small or large group	Correct digits in answer
Multiplication and Division Fact Families 0-12	2 minutes	Individual, small or large group	Correct digits in answer
Addition, Subtraction, Multiplication and Division Fact Families 0-12	2 minutes	Individual, small or large group	Correct digits in answer



Portions of the AIMSweb Math Fact Probes are shown in the next examples. The first Math Fact Probe is comprised of Division Facts in number families 0-12, with a range of problems from 0/0 to 144/12.

### Sample Division Facts Probe

Student Name: \_\_\_\_\_
Grade: \_\_\_\_\_
Teacher Name: \_\_\_\_\_

$7 \overline{)63}$	$1 \overline{)3}$	$5 \overline{)5}$	$5 \overline{)45}$	$3 \overline{)21}$	$6 \overline{)30}$	$4 \overline{)20}$
$2 \overline{)24}$	$6 \overline{)6}$	$12 \overline{)36}$	$2 \overline{)18}$	$9 \overline{)63}$	$1 \overline{)9}$	$8 \overline{)8}$
$8 \overline{)96}$	$11 \overline{)11}$	$4 \overline{)28}$	$7 \overline{)21}$	$6 \overline{)6}$	$4 \overline{)32}$	$3 \overline{)27}$

Each of the Math Facts Probes is accompanied by an answer key with the correct answer printed in bold for each problem and the number of Correct Digits (CD) possible in the row and the cumulative count in the margin.

### Sample Division Facts Answer Key

$7 \overline{)63}$	$1 \overline{)3}$	$5 \overline{)5}$	$5 \overline{)45}$	$3 \overline{)21}$	$6 \overline{)30}$	$4 \overline{)20}$	7 (7)
$2 \overline{)24}$	$6 \overline{)6}$	$12 \overline{)36}$	$2 \overline{)18}$	$9 \overline{)63}$	$1 \overline{)9}$	$8 \overline{)8}$	8 (15)
$8 \overline{)96}$	$11 \overline{)11}$	$4 \overline{)28}$	$7 \overline{)21}$	$6 \overline{)6}$	$4 \overline{)32}$	$3 \overline{)27}$	8 (23)

# Sample Mixed Multiplication and Division Facts Probe

Student Name: _____			Grade: _____		Teacher Name: _____	
$\begin{array}{r} 0 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 0 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 4 \\ \hline \end{array}$	$6 \overline{)30}$	$\begin{array}{r} 1 \\ \times 5 \\ \hline \end{array}$	$7 \overline{)21}$	$7 \overline{)14}$
$\begin{array}{r} 3 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 4 \\ \hline \end{array}$	$11 \overline{)11}$	$4 \overline{)28}$	$1 \overline{)9}$	$\begin{array}{r} 8 \\ \times 1 \\ \hline \end{array}$
$3 \overline{)3}$	$\begin{array}{r} 1 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ \times 3 \\ \hline \end{array}$	$1 \overline{)9}$	$\begin{array}{r} 8 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 6 \\ \hline \end{array}$

# Sample Mixed Addition, Subtraction, Multiplication, and Division Facts Probe

Student Name: _____			Grade: _____		Teacher Name: _____	
$\begin{array}{r} 5 \\ + 0 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ - 3 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ - 4 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ - 6 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 3 \\ \hline \end{array}$	$2 \overline{)12}$	$\begin{array}{r} 7 \\ \times 7 \\ \hline \end{array}$
$\begin{array}{r} 11 \\ \times 4 \\ \hline \end{array}$	$1 \overline{)12}$	$\begin{array}{r} 8 \\ \times 0 \\ \hline \end{array}$	$6 \overline{)24}$	$\begin{array}{r} 0 \\ \times 9 \\ \hline \end{array}$	$1 \overline{)12}$	$\begin{array}{r} 3 \\ \times 5 \\ \hline \end{array}$
$\begin{array}{r} 2 \\ + 7 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ + 8 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ - 4 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ - 4 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ - 3 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ + 5 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 2 \\ \hline \end{array}$

# Administration of Mathematics Curriculum-Based Measurement (M-CBM) and Math Fact Probes

This workbook section covers administration of M-CBM and Math Fact Probes and what examiners need to do (1) before testing students, (2) while testing students, and (3) after testing students.

## Things You Need to Do Before Testing

Before testing students, examiners must have (a) the specific standardized directions for the type of probe to be given, (b) copies of the specific Math Fact Probes, and (c) a copy of the answer key. The testing environment also must be set up appropriately to maximize student performance and minimize distractions and interruptions.

### Things Needed Before Testing:

1. Appropriate M-CBM and/or Math Fact Probes.
2. Students need pencils.
3. A stopwatch or timer.

### Arranging the Testing Environment

Getting accurate assessment results depends on how the testing environment is arranged. M-CBM or Math Fact Probes can be completed by testing students individually or in small (3-4 students) or full class groups if the examiner carefully monitors students' participation. Monitoring students while they are taking the M-CBM probe will be discussed in more detail later in the next section.

### A Number of Things Must Be Kept in Mind

- **It's about Testing, Not Teaching** - The standardized directions should always be used. This means keeping the testing a "test." M-CBM is not to be used as instruction. Although appropriate practice of computational skills is a critical component in mathematics success, M-CBM probes should not be used as instructional materials or as practice worksheets.
- **Careful Monitoring to Avoid Excessive Skipping or Overusing the X-ing out of Problems** - Examiners must monitor students so that they don't skip around on the probe or cross out (X) problems that they know how to do. This skipping can inflate a student's score when they only complete the easiest problems, or only the problems of a specific type. It also makes efficient scoring more difficult. The standardized instructions require the examiner to correct this skipping or overuse of crossing out problems by saying,

*"Try to work EACH problem. You can do this kind of problem so don't skip."*

If students continue to skip problems or cross out problems they would be expected to complete, we recommend discontinuing testing and re-administering the probe individually.

### What the Examiner Scores

Examiners will score students' probes by using the scoring method for Correct Digits (CD) appropriate for their grade and mathematics instruction approach. Counting the number of problems correct and computing accuracy also can provide useful supplemental information.

## Things You Need to Do While Administering the Test

Because M-CBM and Math Fact Probes are standardized tests, examiners must give the test the same way every time and differences among examiners must be minimized.

### General Considerations

**Different Math Measures Require Different Directions.** The appropriate standardized directions for the specific probe type should be read aloud to the student(s). AIMSweb M-CBM and Math Fact probes come in four similar, but not identical forms and it is important to match the directions to the type of probe. Copies of the four directions forms can be found on the following pages and in an easily reproducible format in Appendix A.

**Monitoring of Participation is Critical.** If testing is done in large or small groups, it is important to monitor students' participation. If students stop writing answers to problems for about 10 seconds before the test is finished, point to their paper and say to them *"Keep writing your answers as best you can."* This prompt can be repeated to students should they pause again or stop trying to answer problems. Students must be corrected when excessive skipping or crossing out problems is observed.

**Avoid Answering Questions.** Do not provide corrections or feedback to students on whether they were writing correct answers during the testing. If students want corrective feedback after testing, it is appropriate for teachers to go over items students answered correctly and incorrectly. We do not recommend letting the students keep their tests.

## Math Curriculum-Based Measurement (M-CBM) Standard Directions

### Grades 1-3 Probes

1. Students have an M-CBM probe and pencil.

2. Say to the student(s):

*“We’re going to take a 2-minute math test. I want you to write your answers to several kinds of math problems. Some are addition and some are subtraction. Look at each problem carefully before you answer it.”*

*When I say ‘BEGIN’ write your answer to the FIRST problem (demonstrate by pointing) and work ACROSS the page. Then go to the next row.*

*Try to work EACH problem. If you come to one YOU REALLY DON’T KNOW HOW TO DO, put an ‘X’ through it and go to the next one.*

*If you finish the first side, turn it over and continue working. Are there any questions? (Pause)”*

3. Say “BEGIN” and start your stopwatch/timer.

4. If testing in groups, walk around and monitor students to ensure they are not skipping problems, are working across the page, and continue to write answers to the problems during the test time.

If a student is excessively skipping problems they should know how to do, say to the student:

*“Try to work EACH problem. You can do this kind of problem so don’t skip or put an ‘X’ over it.”*

If a student is not working across the page, say to the student:

*“Work ACROSS the page. Try to work each problem in the row.”*

If a student stops working before the test is done, say to the student:

*“Keep doing the best work you can.”*

5. At the end of 2 minutes, say “Stop. Put your pencils down.” Monitor to ensure students stop working.

## Math Curriculum-Based Measurement (M-CBM) Standard Directions

### Grades 4-6 Probes

1. Students have an M-CBM probe and pencil.

2. Say to the student(s):

*“We’re going to take a 4-minute math test. I want you to write your answers to several kinds of math problems. Look at each problem carefully before you answer it.*

*When I say ‘BEGIN,’ write your answer to the FIRST problem (demonstrate by pointing) and work ACROSS the page. Then go to the next row.*

*Try to work EACH problem. If you come to one YOU REALLY DON’T KNOW HOW TO DO, put an ‘X’ through it and go to the next one.*

*If you finish the first side, turn it over and continue working. Are there any questions? (Pause)”*

3. Say “BEGIN” and start your stopwatch/timer.

4. If testing in groups, walk around and monitor students to ensure they are not skipping problems, are working across the page, and continue to write answers to the problems during the test time.

If a student is excessively skipping problems they should know how to do, say to the student:

*“Try to work EACH problem. You can do this kind of problem so don’t skip or put an ‘X’ over it.”*

If a student is not working across the page, say to the student:

*“Work ACROSS the page. Try to work each problem in the row.”*

If a student stops working before the test is done, say to the student:

*“Keep doing the best work you can.”*

5. At the end of 4 minutes, say “Stop. Put your pencils down.” Monitor to ensure students stop working.

## Single-Skill Math Fact Probes Standard Directions Grades 1-6 Probes

1. Students have a Math Fact Probe and a pencil.
2. Say to the student(s):

*We're going to take a 2-minute Math Fact Probes test. I want you to write your answers to these*

*<Addition>*

*<Subtraction>*

*<Multiplication>*

*<Division>*

*problems. Look at each problem carefully before you answer it."*

*When I say 'BEGIN,' write your answer to the FIRST problem (demonstrate by pointing) and work ACROSS the page. Then go to the next row.*

*Try to work EACH problem. If you come to one YOU REALLY DON'T KNOW HOW TO DO, put an 'X' through it and go to the next one.*

*If you finish the first side, turn it over and continue working. Are there any questions? (Pause)"*

3. Say, "BEGIN" and start your stopwatch/timer.
4. If testing in groups, walk around and monitor students to ensure they are not skipping problems, are working across the page, and continue to write answers to the problems during the test time.

If a student is excessively skipping problems they should know how to do, say to the student:

*"Try to work EACH problem. You can do this kind of problem so don't skip or put an 'X' over it."*

If a student is not working across the page, say to the student.

*"Work across the page. Try to work each problem in the row."*

If a student stops working before the test is done, say to the student.

*"Keep doing the best work you can."*

5. At the end of 2 minutes, say, "Stop. Put your pencils down." Monitor to ensure students stop working.

## Multiple-Skill Math Fact Probes Standard Directions

### Grades 1-6 Probes

1. Students have a Math Fact Probe and a pencil.
2. Say to the student(s):

*We're going to take a 2-minute Math Fact test. I want you to write your answers to:*

*<Addition and subtraction>*

*<Multiplication and division>*

*<Addition, subtraction, multiplication, and division>*

*problems. Look at each problem carefully before you answer it."*

*When I say 'BEGIN,' write your answer to the FIRST problem (demonstrate by pointing) and work ACROSS the page. Then go to the next row.*

*Try to work EACH problem. If you come to one YOU REALLY DON'T KNOW HOW TO DO, put an 'X' through it and go to the next one.*

*If you finish the first side, turn it over and continue working. Are there any questions? (Pause)"*

3. Say, "BEGIN" and start your stopwatch/timer.
4. If testing in groups, walk around and monitor students to ensure they are not skipping problems, are working across the page, and continue to write answers to the problems during the test time.  
  
If a student is excessively skipping problems they should know how to do, say to the student:  
*"Try to work EACH problem. You can do this kind of problem so don't skip or put an 'X' over it."*  
  
If a student is not working across the page, say to the student.  
*"Work across the page. Try to work each problem in the row."*  
  
If a student stops working before the test is done, say to the student.  
*"Keep doing the best work you can."*
5. At the end of 2 minutes, say, "Stop. Put your pencils down." Monitor to ensure students stop working.



## Things You Need to Do After the Testing

After the student has completed the math probe(s), score the test as soon as you can. Your most important task is to determine the number of Correct Digits (CD). With an answer key, counting CD is a straightforward, economical score that serves as a valid indicator of general mathematics computation skills for most students through Grade 6 and for older students with computational difficulties. It typically takes less than 1 minute to count CD. Examiners underline the CD the students write and sum the number of underlines.

Complete details regarding how to score CD in the **answer only** or in the **answer and critical processes** are outlined in the next section.

## Scoring of AIMSweb Computation

The number of Correct Digits (CD) that a student writes are scored and summed using one of two scoring methods.

For M-CBM probes in Grades 1-4, scoring the number of CD in the *answer only* is the preferred method. For M-CBM probes in Grades 5-6, educators can choose to score the number of CD in the *answer only* or in the *answer and critical processes* of the answer.

The former (CD in *answer only*) may be the preferred method when a mathematics curriculum teaches students multiple ways to solve computational problems (i.e., there is no single correct way). The latter method implies there is a common way that students learn to solve more complex computational problems and that more challenging problems are “worth more” in terms of outcomes and successful completion should be reflected in a higher CD score.

For Math Fact Probes, only the numbers of digits in the answer are counted.

### General Scoring Rules Independent of Scoring Method

**Correct Digits** - Each correct digit that a student writes is marked with an underline and counted.

$$\begin{array}{r} 12 \\ \times 7 \\ \hline 84 \end{array}$$

(2 CD Possible)

Score = 2 CD

$$\begin{array}{r} 12 \\ \times 7 \\ \hline 89 \end{array}$$

(2 CD Possible)

Score = 1 CD

$$\begin{array}{r} 12 \\ \times 7 \\ \hline 74 \end{array}$$

(2 CD Possible)

Score = 1 CD

$$\begin{array}{r} 12 \\ \times 7 \\ \hline 19 \end{array}$$

(2 CD Possible)

Score = 0 CD

$$\begin{array}{r} 9558 \\ - 6519 \\ \hline 3039 \end{array}$$

(4 CD Possible)

Score = 4 CD

$$\begin{array}{r} 9558 \\ - 6519 \\ \hline 3041 \end{array}$$

(4 CD Possible)

Score = 2 CD

**Incomplete Problems** - Sometimes students don't finish a problem. Score for the number of correct digits that are written.

Answer Key		
$\begin{array}{r} 360 \\ \times 9 \\ \hline 40 \end{array}$	<p>(4 CD Possible)</p> <p>Score = 2 CD</p>	$\begin{array}{r} 360 \\ \times 9 \\ \hline 3240 \\ (4) \end{array}$
$\begin{array}{r} 9488 \\ - 8084 \\ \hline 404 \end{array}$	<p>(4 CD Possible)</p> <p>Score = 3 CD</p>	$\begin{array}{r} 9488 \\ - 8084 \\ \hline 1404 \\ (4) \end{array}$

**X-ed Out Problems** - Sometimes students start a problem and then cross it out. Sometimes students go back and write answers for problems they have crossed out. Ignore the X and score what you see.

Answer Key		
$\begin{array}{r} \cancel{98} \\ \times \cancel{7} \\ \hline \cancel{56} \end{array}$	<p>(3 CD Possible)</p> <p>Score = 1 CD</p>	$\begin{array}{r} 98 \\ \times 7 \\ \hline 686 \\ (3) \end{array}$
$\begin{array}{r} \cancel{925} \\ - \cancel{28} \\ \hline 897 \end{array}$	<p>(3 CD Possible)</p> <p>Score = 3 CD</p>	$\begin{array}{r} 925 \\ - 28 \\ \hline 897 \\ (3) \end{array}$

**Legibility and Reversed or Rotated Numbers** - Sometimes trying to figure out what number the student wrote can be challenging, especially with younger students or older students with mathematics achievement problems. To make scoring efficient and reliable, we recommend attention to three rules.

1. If it is difficult to determine what the number is at all, count it wrong.
2. If the reversed number is obvious, but correct, count it as a correct digit.

$$\begin{array}{r} 10 \\ + 4 \\ \hline 14 \\ \hline \end{array}$$

(2 CD Possible)

Score = 2 CD

$$\begin{array}{r} 7 \\ + 6 \\ \hline 13 \\ \hline \end{array}$$

(2 CD Possible)

Score = 2 CD

3. If the numbers 6 or 9 are potentially rotated and the digit is currently incorrect, count it as an incorrect digit.

$$\begin{array}{r} 6 \\ - 0 \\ \hline 9 \\ \hline \end{array}$$

(1 CD Possible)

Score = 0 CD

$$\begin{array}{r} 6 \\ 3 \overline{) 27} \end{array}$$

(1 CD Possible)

Score = 0 CD

## Scoring Rules for Answer and Critical Processes

When students' Grade 5 or Grade 6 M-CBM probes are scored for the number of CDs in the **answer only** and **critical processes**, the examiner uses the answer key that details which digits are to be counted. Each problem has an "assigned CD value" based on what AIMSweb believes is the most conventional method of solving the computational problem. Compare how the same multi-step multiplication problem would be scored using the different methods.

$\begin{array}{r} 630 \\ \times 48 \\ \hline 30240 \\ (5) \end{array}$	<p><i>Answer Only</i></p> <p>5 CD Possible</p>	$\begin{array}{r} 630 \\ \times 48 \\ \hline 5040 \\ 2520 \\ \hline 30240 \\ (13) \end{array}$	<p><i>Answer and Critical Processes</i></p> <p>13 CD Possible</p>
--	--	--	---

Should the student solve the problem correctly as shown below-left, their score would be 13 CD. Although you don't need to count every digit written in a correct answer, it is important to write the number of CDs awarded to the problem next to the answer. Should the student solve the problem and not write any of the CD as shown below-right, the score would be 0 CD.

$\begin{array}{r} 630 \\ \times 48 \\ \hline 5040 \\ 2520 \\ \hline 30,240 \end{array}$	<p>(13 CD Possible)</p> <p>Score = 13 CD</p>	$\begin{array}{r} 630 \\ \times 48 \\ \hline 678 \end{array}$	<p>(13 CD Possible)</p> <p>Score = 0 CD</p>	<p>Answer Key</p> $\begin{array}{r} 630 \\ \times 48 \\ \hline 5040 \\ 2520 \\ \hline 30240 \\ (13) \end{array}$
---	--	---	---	--

Sometimes students are so proficient in their computation that they don't show all their work. If the answer is correct as shown below-left, their score is the number of CDs possible shown in the answer key. If they do not show their work and the answer is incorrect, the examiner can only "score what they see" as shown below-right.

$\begin{array}{r} 630 \\ \times 48 \\ \hline 30240 \end{array}$	<p>(13 CD Possible)</p> <p>Score = 13 CD</p>	$\begin{array}{r} 630 \\ \times 48 \\ \hline 30348 \end{array}$	<p>(13 CD Possible)</p> <p>Score = 3 CD</p>	<p>Answer Key</p> $\begin{array}{r} 630 \\ \times 48 \\ \hline 5040 \\ 2520 \\ \hline 30240 \\ (13) \end{array}$
---	--	---	---	--

First, compare students' answers to the answer key. If the problem is incorrect, then underline any of the digits that are correct. Two examples are provided below.

$\begin{array}{r} 2 \\ 630 \\ \times 48 \\ \hline 5040 \\ 2520 \\ \hline 7560 \end{array}$	<p>(13 CD Possible)</p> <p>Score = 5 CD</p>	$\begin{array}{r} 1 \\ 630 \\ \times 48 \\ \hline 1980 \\ 2520 \\ \hline 27180 \end{array}$	<p>(13 CD Possible)</p> <p>Score = 6 CD</p>	<p>Answer Key</p> $\begin{array}{r} 630 \\ \times 48 \\ \hline 5040 \\ 2520 \\ \hline 30240 \\ (13) \end{array}$
--	---	---	---	--

**Alignment.** Sometimes students' answers are not aligned correctly according to place value. If the answer is correct, ignore the alignment problem and count the digits as correct as shown below.

$\begin{array}{r} 703 \\ 358 \\ + 307 \\ \hline 1368 \end{array}$	<p>(4 CD Possible)</p> <p>Score = 4 CD</p>	<p>Answer Key</p> $\begin{array}{r} 703 \\ 358 \\ + 307 \\ \hline 1368 \\ (4) \end{array}$
---	--	--

If the answer is incorrect, count the digits as they appear in approximate place value as shown below, even if a place value error may seem obvious. Although this may make good diagnostic information, in many instances, the time spent trying to figure out whether the error was one of place value or due to some other cause has the potential to make scoring time consuming and less reliable.

$\begin{array}{r} 2 \\ 630 \\ \times 48 \\ \hline 5040 \\ 2520 \end{array}$	<p>(13 CD Possible)</p> <p>Score = 4 CD</p>	<p>Answer Key</p> $\begin{array}{r} 630 \\ \times 48 \\ \hline 5040 \\ 2520 \\ \hline 30240 \\ (13) \end{array}$
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## Determining Inter-Scorer Agreement

Getting accurate student mathematics results should not depend on who assesses the students. However, because no test is without error (i.e., perfectly reliable), we need to have confidence in how much different examiners agree. This process of obtaining Inter-Scorer Agreement is done after training and periodically to ensure that examiners are consistent in administration and scoring.

A simple formula for calculating Inter-Scorer Agreement is:

$$\text{Agreements}/(\text{Agreements} + \text{Disagreements}) \times 100$$

*For 2 examiners this formula can be reduced to*

$$\text{Lowest Score}/\text{Highest Score} \times 100$$

*For 2 examiners who scored Susie as 50 CD and 48 CD, their Inter-Scorer Agreement would be 96% as follows:*

- The low score was 48 CD.
- The high score was 50 CD.

$$48/50 = .96$$

$$.96 \times 100 = 96\%$$

*Inter-Scorer Agreement can be determined for more than 1 pair as follows. Each pair of scores are compared for agreements and disagreements, and then entered into the formula.*

*For 3 examiners (1, 2, 3) who score Susie as 50 CD, 48 CD, and 47 CD, their Inter-Scorer agreement would be 96% as follows:*

- Examiner 1 and 2 agreed on 48 CD and disagreed on 2
- Examiner 1 and 3 agreed on 47 CD and disagreed on 3
- Examiner 2 and 3 agreed on 47 CD and disagreed on 1
- Agreements  $(48 + 47 + 47)/\text{Agreements} + \text{Disagreements } (48 + 2) + (47 + 3) + (47 + 1) = 142/148 = .96$
- $.96 \times 100 = 96\%$

## Checking Accuracy in Testing Administration

To ensure that examiners are consistent in administration and scoring, we recommend “check outs and feedback” the process of observing each other administer M-CBM and Math Fact Probes. This check out process is accomplished using the Accuracy of Implementation Rating Scale-Math (AIRS-Math) shown in reduced size format in the following table and provided in full size in Appendix A. After watching a trainee administer M-CBM or Math Fact Probes, complete the AIRS-Math, calculate Inter-Scorer agreement and provide feedback. This will ensure accurate and consistent standardized testing.

### Accuracy of Implementation Rating Scale Mathematics Computation CBM (AIRS-M-CBM)

X = completed accurately O = incorrectly completed

#### Testing Procedure

#### Observation

	1	2	3	4
Selects an appropriate math probe	—	—	—	—
Stands appropriate distance from student(s)	—	—	—	—
Provides student with a pencil and math probe	—	—	—	—
Says <i>appropriate</i> standardized directions accurately	—	—	—	—
Says “We’re going to take a 2-minute Math Fact test. <i>I want you to write your answers to:</i> <Addition and subtraction> <Multiplication and division> <Addition, subtraction, multiplication, and division> problems. Look at each problem carefully before you answer it.”	—	—	—	—
Starts stopwatch	—	—	—	—
Monitors small or large group administration by moving around the room	—	—	—	—
Corrects Skipping or Overuse of X-ing	—	—	—	—
Encourages student who stop to keep working	—	—	—	—
Times accurately	—	—	—	—
Says “Stop; Put your pencil down”	—	—	—	—
Stops stopwatch	—	—	—	—
Uses correct answer key for scoring method	—	—	—	—
Scores accurately	—	—	—	—

#### Additional Comments:

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# Appendices

# Appendix A

**Standardized Directions for M-CBM Grades 1-3 Probes**  
**Standardized Directions for M-CBM Grades 4-6 Probes**

**Standardized Directions for Single Skill Math Fact Probes**  
**Standardized Directions for Multi-Skill Math Fact Probes**

**Accuracy of Implementation Rating Scale**

## Math Curriculum-Based Measurement (M-CBM) Standard Directions

### Grades 1-3 Probes

1. Students have an M-CBM probe and pencil.

2. Say to the student(s):

*"We're going to take a 2-minute math test. I want you to write your answers to several kinds of math problems. Some are addition and some are subtraction. Look at each problem carefully before you answer it."*

*"When I say 'BEGIN' write your answer to the FIRST problem (demonstrate by pointing) and work ACROSS the page. Then go to the next row."*

*"Try to work EACH problem. If you come to one YOU REALLY DON'T KNOW HOW TO DO, put an 'X' through it and go to the next one."*

*"If you finish the first side, turn it over and continue working. Are there any questions? (Pause)"*

3. Say "BEGIN" and start your stopwatch/timer.

4. If testing in groups walk around and monitor students to ensure they are not skipping problems, are working across the page, and continue to write answers to the problems during the test time.

If a student is excessively skipping problems they should know how to do, say to the student:

*"Try to work EACH problem. You can do this kind of problem so don't skip or put an 'X' over it."*

If a student is not working across the page, say to the student:

*"Work ACROSS the page. Try to work each problem in the row."*

If a student stops working before the test is done, say to the student:

*"Keep doing the best work you can."*

5. At the end of 2 minutes, say "Stop. Put your pencils down." Monitor to ensure students stop working.

## Math Curriculum-Based Measurement (M-CBM) Standard Directions

### Grades 4-6 Probes

1. Students have an M-CBM probe and pencil.

2. Say to the student(s):

*“We’re going to take a 4-minute math test. I want you to write your answers to several kinds of math problems. Look at each problem carefully before you answer it.*

*When I say ‘BEGIN,’ write your answer to the FIRST problem (demonstrate by pointing) and work ACROSS the page. Then go to the next row.*

*Try to work EACH problem. If you come to one YOU REALLY DON’T KNOW HOW TO DO, put an ‘X’ through it and go to the next one.*

*If you finish the first side, turn it over and continue working. Are there any questions? (Pause)”*

3. Say “BEGIN” and start your stopwatch/timer.

4. If testing in groups, walk around and monitor students to ensure they are not skipping problems, are working across the page, and continue to write answers to the problems during the test time.

If a student is excessively skipping problems they should know how to do, say to the student:

*“Try to work EACH problem. You can do this kind of problem so don’t skip or put an ‘X’ over it.”*

If a student is not working across the page, say to the student:

*“Work ACROSS the page. Try to work each problem in the row.”*

If a student stops working before the test is done, say to the student:

*“Keep doing the best work you can.”*

5. At the end of 4 minutes, say “Stop. Put your pencils down.” Monitor to ensure students stop working.

## Single-Skill Math Fact Probes Standard Directions

1. Students have a Math Fact Probes and a pencil.

2. Say to the student(s):

*We're going to take a 2-minute Math Fact Probes test. I want you to write your answers to these*

*<Addition>*

*<Subtraction>*

*<Multiplication>*

*<Division>*

*problems. Look at each problem carefully before you answer it."*

*When I say 'BEGIN,' write your answer to the FIRST problem (demonstrate by pointing) and work ACROSS the page. Then go to the next row.*

*Try to work EACH problem. If you come to one YOU REALLY DON'T KNOW HOW TO DO, put an 'X' through it and go to the next one.*

*If you finish the first side, turn it over and continue working. Are there any questions? (Pause)"*

3. Say, "BEGIN" and start your stopwatch/timer.

4. If testing in groups walk around and monitor students to ensure they are not skipping problems, are working across the page, and continue to write answers to the problems during the test time.

If a student is excessively skipping problems they should know how to do, say to the student:

*"Try to work EACH problem. You can do this kind of problem so don't skip or put an 'X' over it."*

If a student is not working across the page, say to the student.

*"Work across the page. Try to work each problem in the row."*

If a student stops working before the test is done, say to the student.

*"Keep doing the best work you can."*

5. At the end of 2 minutes, say, "Stop. Put your pencils down." Monitor to ensure students stop working.



## Multiple-Skill Math Fact Probes Standard Directions

1. Students have a Math Fact Probe and a pencil.

2. Say to the student(s):

*We're going to take a 2-minute Math Fact test. I want you to write your answers to:*

*<Addition and subtraction>*

*<Multiplication and division>*

*<Addition, subtraction, multiplication, and division>*

*problems. Look at each problem carefully before you answer it."*

*When I say 'BEGIN,' write your answer to the FIRST problem (demonstrate by pointing) and work ACROSS the page. Then go to the next row.*

*Try to work EACH problem. If you come to one YOU REALLY DON'T KNOW HOW TO DO, put an 'X' through it and go to the next one.*

*If you finish the first side, turn it over and continue working. Are there any questions? (Pause)"*

3. Say, "BEGIN" and start your stopwatch/timer.

4. If testing in groups walk around and monitor students to ensure they are not skipping problems, are working across the page, and continue to write answers to the problems during the test time.

If a student is excessively skipping problems they should know how to do, say to the student:

*"Try to work EACH problem. You can do this kind of problem so don't skip or put an 'X' over it."*

If a student is not working across the page, say to the student.

*"Work across the page. Try to work each problem in the row."*

If a student stops working before the test is done, say to the student.

*"Keep doing the best work you can."*

5. At the end of 2 minutes, say, "Stop. Put your pencils down." Monitor to ensure students stop working.

## Accuracy of Implementation Rating Scale Mathematics Computation Curriculum Based Measurement (M-CBM)

X = completed accurately O = incorrectly completed

### Testing Procedure

### Observation

	1	2	3	4
Selects an appropriate math probe	—	—	—	—
Stands appropriate distance from student(s)	—	—	—	—
Provides student with a pencil and math probe	—	—	—	—
Says appropriate standardized directions accurately	—	—	—	—
Says <i>"We're going to take a 2-minute Math Fact test."</i>				
<i>I want you to write your answers to:</i>				
<Addition and subtraction>				
<Multiplication and division>				
<Addition, subtraction, multiplication, and division>				
<i>problems. Look at each problem carefully</i>				
<i>before you answer it."</i>	—	—	—	—
Starts stopwatch	—	—	—	—
Monitors small or large group administration by				
moving around the room	—	—	—	—
Corrects Skipping or Overuse of X-ing	—	—	—	—
Encourages student who stop to keep working	—	—	—	—
Times accurately	—	—	—	—
Says "Stop; Put your pencil down"	—	—	—	—
Stops stopwatch	—	—	—	—
Uses correct answer key for scoring method	—	—	—	—
Scores accurately	—	—	—	—

### Additional Comments:

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# Appendix B

## Practice Exercises

## Practice Exercise 1

AIMSweb® M-CBM Computation #16 - Grade 3

Student Name: Marco Grade: \_\_\_\_\_ Teacher Name: \_\_\_\_\_

$\begin{array}{r} 938 \\ - 48 \\ \hline 910 \end{array}$	$\begin{array}{r} 18 \\ + 6 \\ \hline 24 \end{array}$	<del><math display="block">\begin{array}{r} 284 \\ + 596 \\ \hline \end{array}</math></del>	<del><math display="block">\begin{array}{r} 582 \\ + 27 \\ \hline 5 \end{array}</math></del>	<del><math display="block">\begin{array}{r} 846 \\ 639 \\ + 393 \\ \hline \end{array}</math></del>	<del><math display="block">\begin{array}{r} 319 \\ 63 \\ + 956 \\ \hline \end{array}</math></del>
<del><math display="block">\begin{array}{r} 654 \\ + 248 \\ \hline 89 \end{array}</math></del>	$\begin{array}{r} 77 \\ - 73 \\ \hline 4 \end{array}$	$\begin{array}{r} 83 \\ - 34 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ + 8 \\ \hline 12 \end{array}$	$\begin{array}{r} 794 \\ - 20 \\ \hline 774 \end{array}$	$\begin{array}{r} 758 \\ + 232 \\ \hline 990 \end{array}$
$\begin{array}{r} 165 \\ - 0 \\ \hline 165 \end{array}$	$\begin{array}{r} 8 \\ + 7 \\ \hline 15 \end{array}$	<del><math display="block">\begin{array}{r} 986 \\ - 871 \\ \hline \end{array}</math></del>	$\begin{array}{r} 867 \\ 631 \\ + 745 \\ \hline \end{array}$	$\begin{array}{r} 0 \\ 8 \\ + 4 \\ \hline 12 \end{array}$	$\begin{array}{r} 17 \\ - 11 \\ \hline 6 \end{array}$

## Practice Exercise 1 Scoring Key

AIMSweb® M-CBM Computation #16 - Grade 3

$\begin{array}{r} 938 \\ - 48 \\ \hline 890 \\ (3) \end{array}$	$\begin{array}{r} 18 \\ + 6 \\ \hline 24 \\ (2) \end{array}$	$\begin{array}{r} 284 \\ + 596 \\ \hline 880 \\ (3) \end{array}$	$\begin{array}{r} 582 \\ + 27 \\ \hline 609 \\ (3) \end{array}$	$\begin{array}{r} 846 \\ 639 \\ + 393 \\ \hline 1878 \\ (4) \end{array}$	$\begin{array}{r} 319 \\ 63 \\ + 956 \\ \hline 1338 \\ (4) \end{array}$
$\begin{array}{r} 654 \\ + 248 \\ \hline 902 \\ (3) \end{array}$	$\begin{array}{r} 77 \\ - 73 \\ \hline 4 \\ (1) \end{array}$	$\begin{array}{r} 83 \\ - 34 \\ \hline 49 \\ (2) \end{array}$	$\begin{array}{r} 4 \\ + 8 \\ \hline 12 \\ (2) \end{array}$	$\begin{array}{r} 794 \\ - 20 \\ \hline 774 \\ (3) \end{array}$	$\begin{array}{r} 758 \\ + 232 \\ \hline 990 \\ (3) \end{array}$
$\begin{array}{r} 165 \\ - 0 \\ \hline 165 \\ (3) \end{array}$	$\begin{array}{r} 8 \\ + 7 \\ \hline 15 \\ (2) \end{array}$	$\begin{array}{r} 986 \\ - 871 \\ \hline 115 \\ (3) \end{array}$	$\begin{array}{r} 867 \\ 631 \\ + 745 \\ \hline 2243 \\ (4) \end{array}$	$\begin{array}{r} 0 \\ 8 \\ + 4 \\ \hline 12 \\ (2) \end{array}$	$\begin{array}{r} 17 \\ - 11 \\ \hline 6 \\ (1) \end{array}$

## Practice Exercise 1 Scoring Answers

AIMSweb® M-CBM Computation #16 - Grade 3

Student Name: Marco Grade: \_\_\_\_\_ Teacher Name: \_\_\_\_\_

<del>938</del> <del>- 48</del> <u>910</u>	<del>18</del> <del>+ 6</del> <u>24</u>	<del>284</del> <del>+ 596</del> <u>X</u>	<del>582</del> <del>+ 27</del> <u>5</u>	<del>846</del> <del>639</del> <u>+ 393</u>	<del>319</del> <del>63</del> <u>+ 956</u>
<del>654</del> <del>+ 248</del> <u>89</u>	<del>77</del> <del>- 73</del> <u>4</u>	<del>83</del> <del>- 34</del> <u></u>	<del>4</del> <del>+ 8</del> <u>12</u>	<del>794</del> <del>- 20</del> <u>774</u>	<del>758</del> <del>+ 232</del> <u>990</u>
<del>165</del> <del>- 0</del> <u>165</u>	<del>8</del> <del>+ 7</del> <u>14</u>	<del>986</del> <del>- 871</del> <u></u>	<del>867</del> <del>631</del> <u>+ 745</u>	<del>0</del> <del>8</del> <u>+ 4</u>	<del>17</del> <del>- 11</del> <u>6</u>

19 CD

## Practice Exercise 2

AIMSweb® M-CBM Computation #16 - Grade 3

Student Name: Elizabeth Grade: \_\_\_\_\_ Teacher Name: \_\_\_\_\_

$\begin{array}{r} 813 \\ 938 \\ - 48 \\ \hline 890 \end{array}$	$\begin{array}{r} 18 \\ + 6 \\ \hline 24 \end{array}$	$\begin{array}{r} 11 \\ 284 \\ + 596 \\ \hline 880 \end{array}$	$\begin{array}{r} 1 \\ 582 \\ + 27 \\ \hline 609 \end{array}$	$\begin{array}{r} 846 \\ 639 \\ + 393 \\ \hline 1878 \end{array}$	$\begin{array}{r} 319 \\ 63 \\ + 956 \\ \hline 1338 \end{array}$
$\begin{array}{r} 11 \\ 654 \\ + 248 \\ \hline 902 \end{array}$	$\begin{array}{r} 77 \\ - 73 \\ \hline 4 \end{array}$	$\begin{array}{r} 713 \\ 83 \\ - 34 \\ \hline 49 \end{array}$	$\begin{array}{r} 4 \\ + 8 \\ \hline 12 \end{array}$	$\begin{array}{r} 794 \\ - 20 \\ \hline 774 \end{array}$	$\begin{array}{r} 1 \\ 758 \\ + 232 \\ \hline 990 \end{array}$
$\begin{array}{r} 165 \\ - 0 \\ \hline 165 \end{array}$	$\begin{array}{r} 8 \\ + 7 \\ \hline 15 \end{array}$	$\begin{array}{r} 986 \\ - 871 \\ \hline 115 \end{array}$	$\begin{array}{r} 11 \\ 867 \\ 631 \\ + 745 \\ \hline 2243 \end{array}$	$\begin{array}{r} 0 \\ 8 \\ + 4 \\ \hline 12 \end{array}$	$\begin{array}{r} 17 \\ - 11 \\ \hline 6 \end{array}$

## Practice Exercise 2 Scoring Key

AIMSweb® M-CBM Computation #16 - Grade 3

$\begin{array}{r} 938 \\ - 48 \\ \hline 890 \\ (3) \end{array}$	$\begin{array}{r} 18 \\ + 6 \\ \hline 24 \\ (2) \end{array}$	$\begin{array}{r} 284 \\ + 596 \\ \hline 880 \\ (3) \end{array}$	$\begin{array}{r} 582 \\ + 27 \\ \hline 609 \\ (3) \end{array}$	$\begin{array}{r} 846 \\ 639 \\ + 393 \\ \hline 1878 \\ (4) \end{array}$	$\begin{array}{r} 319 \\ 63 \\ + 956 \\ \hline 1338 \\ (4) \end{array}$
$\begin{array}{r} 654 \\ + 248 \\ \hline 902 \\ (3) \end{array}$	$\begin{array}{r} 77 \\ - 73 \\ \hline 4 \\ (1) \end{array}$	$\begin{array}{r} 83 \\ - 34 \\ \hline 49 \\ (2) \end{array}$	$\begin{array}{r} 4 \\ + 8 \\ \hline 12 \\ (2) \end{array}$	$\begin{array}{r} 794 \\ - 20 \\ \hline 774 \\ (3) \end{array}$	$\begin{array}{r} 758 \\ + 232 \\ \hline 990 \\ (3) \end{array}$
$\begin{array}{r} 165 \\ - 0 \\ \hline 165 \\ (3) \end{array}$	$\begin{array}{r} 8 \\ + 7 \\ \hline 15 \\ (2) \end{array}$	$\begin{array}{r} 986 \\ - 871 \\ \hline 115 \\ (3) \end{array}$	$\begin{array}{r} 867 \\ 631 \\ + 745 \\ \hline 2243 \\ (4) \end{array}$	$\begin{array}{r} 0 \\ 8 \\ + 4 \\ \hline 12 \\ (2) \end{array}$	$\begin{array}{r} 17 \\ - 11 \\ \hline 6 \\ (1) \end{array}$

## Practice Exercise 2 Scoring Answers

AIMSweb® M-CBM Computation #16 - Grade 3

Student Name: Elizabeth Grade: \_\_\_\_\_ Teacher Name: \_\_\_\_\_

$\begin{array}{r} 813 \\ 938 \\ - 48 \\ \hline 890 \end{array}$	$\begin{array}{r} 18 \\ + 6 \\ \hline 24 \end{array}$	$\begin{array}{r} 1 \\ 284 \\ + 596 \\ \hline 880 \end{array}$	$\begin{array}{r} 1 \\ 582 \\ + 27 \\ \hline 609 \end{array}$	$\begin{array}{r} 1 \\ 846 \\ 639 \\ + 393 \\ \hline 1878 \end{array}$	$\begin{array}{r} 1 \\ 319 \\ 63 \\ + 956 \\ \hline 1338 \end{array}$	19
$\begin{array}{r} 11 \\ 654 \\ + 248 \\ \hline 902 \end{array}$	$\begin{array}{r} 77 \\ - 73 \\ \hline 4 \end{array}$	$\begin{array}{r} 73 \\ 83 \\ - 34 \\ \hline 49 \end{array}$	$\begin{array}{r} 4 \\ + 8 \\ \hline 12 \end{array}$	$\begin{array}{r} 794 \\ - 20 \\ \hline 774 \end{array}$	$\begin{array}{r} 1 \\ 758 \\ + 232 \\ \hline 990 \end{array}$	13
$\begin{array}{r} 165 \\ - 0 \\ \hline 165 \end{array}$	$\begin{array}{r} 8 \\ + 7 \\ \hline 15 \end{array}$	$\begin{array}{r} 986 \\ - 871 \\ \hline 115 \end{array}$	$\begin{array}{r} 11 \\ 867 \\ 631 \\ + 745 \\ \hline 2243 \end{array}$	$\begin{array}{r} 0 \\ 8 \\ + 4 \\ \hline 12 \end{array}$	$\begin{array}{r} 17 \\ - 11 \\ \hline 6 \end{array}$	15

**4960**

### Practice Exercise 3

AIMSweb® M-CBM Computation #9 - Grade 1

Student Name: Ryan Grade: \_\_\_\_\_ Teacher Name: \_\_\_\_\_

$\begin{array}{r} 18 \\ - 10 \\ \hline 9 \end{array}$	$\begin{array}{r} 20 \\ + 5 \\ \hline 25 \end{array}$	$\begin{array}{r} 13 \\ - 8 \\ \hline 6 \end{array}$	$\begin{array}{r} 16 \\ + 14 \\ \hline 24 \end{array}$	$\begin{array}{r} 7 \\ + 7 \\ \hline 14 \end{array}$	$\begin{array}{r} 3 \\ + 13 \\ \hline 16 \end{array}$
$\begin{array}{r} 7 \\ - 2 \\ \hline 9 \end{array}$	$\begin{array}{r} 11 \\ + 8 \\ \hline 19 \end{array}$	$\begin{array}{r} 8 \\ + 15 \\ \hline 23 \end{array}$	$\begin{array}{r} 6 \\ + 7 \\ \hline 13 \end{array}$	$\begin{array}{r} 15 \\ - 2 \\ \hline 17 \end{array}$	$\begin{array}{r} 10 \\ + 5 \\ \hline 15 \end{array}$
$\begin{array}{r} 5 \\ + 2 \\ \hline 7 \end{array}$	$\begin{array}{r} 13 \\ + 14 \\ \hline 18 \end{array}$	$\begin{array}{r} 12 \\ + 15 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ + 2 \\ \hline 4 \end{array}$	$\begin{array}{r} 4 \\ + 6 \\ \hline 10 \end{array}$	$\begin{array}{r} 7 \\ + 12 \\ \hline 19 \end{array}$
$\begin{array}{r} 19 \\ - 15 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ + 4 \\ \hline 8 \end{array}$	$\begin{array}{r} 8 \\ - 2 \\ \hline 10 \end{array}$	$\begin{array}{r} 13 \\ - 0 \\ \hline 13 \end{array}$	$\begin{array}{r} 5 \\ - 4 \\ \hline 9 \end{array}$	$\begin{array}{r} 10 \\ - 5 \\ \hline 15 \end{array}$
$\begin{array}{r} 8 \\ + 2 \\ \hline 10 \end{array}$	$\begin{array}{r} 9 \\ + 6 \\ \hline 15 \end{array}$	$\begin{array}{r} 20 \\ + 6 \\ \hline 26 \end{array}$	$\begin{array}{r} 6 \\ - 0 \\ \hline 6 \end{array}$	$\begin{array}{r} 17 \\ - 6 \\ \hline 11 \end{array}$	$\begin{array}{r} 3 \\ + 7 \\ \hline 10 \end{array}$



## Practice Exercise 3 Scoring Key

### AIMSweb® M-CBM Computation #9 - Grade 1

$$\begin{array}{r} 18 \\ - 10 \\ \hline 8 \end{array}$$

(1)

$$\begin{array}{r} 20 \\ + 5 \\ \hline 25 \end{array}$$

(2)

$$\begin{array}{r} 13 \\ - 8 \\ \hline 5 \end{array}$$

(1)

$$\begin{array}{r} 16 \\ + 14 \\ \hline 30 \end{array}$$

(2)

$$\begin{array}{r} 7 \\ + 7 \\ \hline 14 \end{array}$$

(2)

$$\begin{array}{r} 3 \\ + 13 \\ \hline 16 \end{array}$$

(2)

$$\begin{array}{r} 7 \\ - 2 \\ \hline 5 \end{array}$$

(1)

$$\begin{array}{r} 11 \\ + 8 \\ \hline 19 \end{array}$$

(2)

$$\begin{array}{r} 8 \\ + 15 \\ \hline 23 \end{array}$$

(2)

$$\begin{array}{r} 6 \\ + 7 \\ \hline 13 \end{array}$$

(2)

$$\begin{array}{r} 15 \\ - 2 \\ \hline 13 \end{array}$$

(2)

$$\begin{array}{r} 10 \\ + 5 \\ \hline 15 \end{array}$$

(2)

$$\begin{array}{r} 5 \\ + 2 \\ \hline 7 \end{array}$$

(1)

$$\begin{array}{r} 13 \\ + 14 \\ \hline 27 \end{array}$$

(2)

$$\begin{array}{r} 12 \\ + 15 \\ \hline 27 \end{array}$$

(2)

$$\begin{array}{r} 2 \\ + 2 \\ \hline 4 \end{array}$$

(1)

$$\begin{array}{r} 4 \\ + 6 \\ \hline 10 \end{array}$$

(2)

$$\begin{array}{r} 7 \\ + 12 \\ \hline 19 \end{array}$$

(2)

$$\begin{array}{r} 19 \\ - 15 \\ \hline 4 \end{array}$$

(1)

$$\begin{array}{r} 4 \\ + 4 \\ \hline 8 \end{array}$$

(1)

$$\begin{array}{r} 8 \\ - 2 \\ \hline 6 \end{array}$$

(1)

$$\begin{array}{r} 13 \\ - 0 \\ \hline 13 \end{array}$$

(2)

$$\begin{array}{r} 5 \\ - 4 \\ \hline 1 \end{array}$$

(1)

$$\begin{array}{r} 10 \\ - 5 \\ \hline 5 \end{array}$$

(1)

$$\begin{array}{r} 8 \\ + 2 \\ \hline 10 \end{array}$$

(2)

$$\begin{array}{r} 9 \\ + 6 \\ \hline 15 \end{array}$$

(2)

$$\begin{array}{r} 20 \\ + 6 \\ \hline 26 \end{array}$$

(2)

$$\begin{array}{r} 6 \\ - 0 \\ \hline 6 \end{array}$$

(1)

$$\begin{array}{r} 17 \\ - 6 \\ \hline 11 \end{array}$$

(2)

$$\begin{array}{r} 3 \\ + 7 \\ \hline 10 \end{array}$$

(2)

## Practice Exercise 3 Scoring Answers

AIMSweb® M-CBM Computation #9 - Grade 1

Student Name: Ryan Grade: \_\_\_\_\_ Teacher Name: \_\_\_\_\_

$\begin{array}{r} 18 \\ - 10 \\ \hline 9 \end{array}$	$\begin{array}{r} 20 \\ + 5 \\ \hline 25 \end{array}$	$\begin{array}{r} 13 \\ - 8 \\ \hline 6 \end{array}$	$\begin{array}{r} 16 \\ + 14 \\ \hline 24 \end{array}$	$\begin{array}{r} 7 \\ + 7 \\ \hline 14 \end{array}$	$\begin{array}{r} 3 \\ + 13 \\ \hline 16 \end{array}$	6
$\begin{array}{r} 7 \\ - 2 \\ \hline 9 \end{array}$	$\begin{array}{r} 11 \\ + 8 \\ \hline 19 \end{array}$	$\begin{array}{r} 8 \\ + 15 \\ \hline 23 \end{array}$	$\begin{array}{r} 6 \\ + 7 \\ \hline 13 \end{array}$	$\begin{array}{r} 15 \\ - 2 \\ \hline 17 \end{array}$	$\begin{array}{r} 10 \\ + 5 \\ \hline 15 \end{array}$	9
$\begin{array}{r} 5 \\ + 2 \\ \hline 7 \end{array}$	$\begin{array}{r} 13 \\ + 14 \\ \hline 18 \end{array}$	$\begin{array}{r} 12 \\ + 15 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ + 2 \\ \hline 4 \end{array}$	$\begin{array}{r} 4 \\ + 6 \\ \hline 10 \end{array}$	$\begin{array}{r} 7 \\ + 12 \\ \hline 19 \end{array}$	6
$\begin{array}{r} 19 \\ - 15 \\ \hline 4 \end{array}$	$\begin{array}{r} 4 \\ + 4 \\ \hline 8 \end{array}$	$\begin{array}{r} 8 \\ - 2 \\ \hline 10 \end{array}$	$\begin{array}{r} 13 \\ - 0 \\ \hline 13 \end{array}$	$\begin{array}{r} 5 \\ - 4 \\ \hline 9 \end{array}$	$\begin{array}{r} 10 \\ - 5 \\ \hline 15 \end{array}$	4
$\begin{array}{r} 8 \\ + 2 \\ \hline 10 \end{array}$	$\begin{array}{r} 9 \\ + 6 \\ \hline 15 \end{array}$	$\begin{array}{r} 20 \\ + 6 \\ \hline 26 \end{array}$	$\begin{array}{r} 6 \\ - 0 \\ \hline 6 \end{array}$	$\begin{array}{r} 17 \\ - 6 \\ \hline 11 \end{array}$	$\begin{array}{r} 3 \\ + 7 \\ \hline 10 \end{array}$	6
						31 CD

## Practice Exercise 4

AIMSweb® M-CBM Computation #9 - Grade 1

Student Name: Ka+ya Grade: \_\_\_\_\_ Teacher Name: \_\_\_\_\_

$\begin{array}{r} 18 \\ 8 - 10 \\ \hline \end{array}$	$\begin{array}{r} 20 \\ 25 + 5 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ 8 - 8 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ 03 + 14 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ >7 + 7 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ + 13 \\ \hline \end{array}$
$\begin{array}{r} 7 \\ 5 - 2 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ + 8 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ + 15 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ + 7 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ - 2 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ + 5 \\ \hline \end{array}$

## Practice Exercise 4 Scoring Key

AIMSweb® M-CBM Computation #9 - Grade 1

$\begin{array}{r} 18 \\ - 10 \\ \hline 8 \\ (1) \end{array}$	$\begin{array}{r} 20 \\ + 5 \\ \hline 25 \\ (2) \end{array}$	$\begin{array}{r} 13 \\ - 8 \\ \hline 5 \\ (1) \end{array}$	$\begin{array}{r} 16 \\ + 14 \\ \hline 30 \\ (2) \end{array}$	$\begin{array}{r} 7 \\ + 7 \\ \hline 14 \\ (2) \end{array}$	$\begin{array}{r} 3 \\ + 13 \\ \hline 16 \\ (2) \end{array}$
$\begin{array}{r} 7 \\ - 2 \\ \hline 5 \\ (1) \end{array}$	$\begin{array}{r} 11 \\ + 8 \\ \hline 19 \\ (2) \end{array}$	$\begin{array}{r} 8 \\ + 15 \\ \hline 23 \\ (2) \end{array}$	$\begin{array}{r} 6 \\ + 7 \\ \hline 13 \\ (2) \end{array}$	$\begin{array}{r} 15 \\ - 2 \\ \hline 13 \\ (2) \end{array}$	$\begin{array}{r} 10 \\ + 5 \\ \hline 15 \\ (2) \end{array}$

## Practice Exercise 4 Scoring Answers

AIMSweb® M-CBM Computation #9 - Grade 1

Student Name: katya Grade: \_\_\_\_\_ Teacher Name: \_\_\_\_\_

$\begin{array}{r} 18 \\ 8 - 10 \\ \hline \end{array}$	$\begin{array}{r} 20 \\ 25 + 5 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ 8 - 8 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ 03 + 14 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 27 + 7 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ + 13 \\ \hline \end{array}$
$\begin{array}{r} 7 \\ 5 - 2 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ + 8 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ + 15 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ + 7 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ - 2 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ + 5 \\ \hline \end{array}$

**4CD**

## Practice Exercise 5: Score for ANSWER ONLY

Student Name: Elizabeth

$$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 8253 \\ 9642 \\ + 7257 \\ \hline 25,152 \end{array}$$

$$\begin{array}{r} 963 \\ + 72 \\ \hline 1,035 \end{array}$$

$$\begin{array}{r} 8807 \\ 1344 \\ + 6102 \\ \hline 16,253 \end{array}$$

$$\begin{array}{r} 64 \\ + 144 \\ \hline 208 \end{array}$$

$$6 \overline{)54}$$

$$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11,467 \end{array}$$

$$2 \overline{)766}$$

$$\begin{array}{r} 7957 \\ 4983 \\ + 5734 \\ \hline 18,574 \end{array}$$

$$\begin{array}{r} 85 \\ \times 9 \\ \hline 765 \end{array}$$

$$3 \overline{)27}$$

$$\begin{array}{r} 523 \\ + 87 \\ \hline 610 \end{array}$$

$$\begin{array}{r} 12 \\ \times 7 \\ \hline 84 \end{array}$$

$$\begin{array}{r} 95 \cancel{8} \phantom{0} \\ - 6519 \\ \hline 3,039 \end{array}$$

$$\begin{array}{r} 5263 \\ - 3242^x \\ \hline \end{array}$$

$$\begin{array}{r} 9703 \\ 528 \\ 6287^x \\ + 143^x \\ \hline \end{array}$$

$$\begin{array}{r} 22 \\ \times 7^x \\ \hline \end{array}$$

$$\begin{array}{r} 195 \\ + 245^x \\ \hline \end{array}$$

## Practice Exercise 5 Scoring Key for ANSWER ONLY

### AIMSweb® M-CBM Computation #4 - Grade 5

$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$ (1)	$\begin{array}{r} 8253 \\ 9642 \\ + 7257 \\ \hline 25152 \end{array}$ (5)	$\begin{array}{r} 963 \\ + 72 \\ \hline 1035 \end{array}$ (4)	$\begin{array}{r} 8807 \\ 1344 \\ + 6102 \\ \hline 16253 \end{array}$ (5)	$\begin{array}{r} 64 \\ + 144 \\ \hline 208 \end{array}$ (3)	$\begin{array}{r} 9 \\ 6 \overline{)54} \\ \hline \end{array}$ (1)	19
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$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \end{array}$ (5)	$\begin{array}{r} 383 \\ 2 \overline{)766} \\ \hline \end{array}$ (3)	$\begin{array}{r} 7957 \\ 4983 \\ + 5734 \\ \hline 18674 \end{array}$ (5)	$\begin{array}{r} 85 \\ \times 9 \\ \hline 765 \end{array}$ (3)	$\begin{array}{r} 9 \\ 3 \overline{)27} \\ \hline \end{array}$ (1)	$\begin{array}{r} 523 \\ + 87 \\ \hline 610 \end{array}$ (3)	20
--	--	--	--	---	---	----

$\begin{array}{r} 12 \\ \times 7 \\ \hline 84 \end{array}$ (2)	$\begin{array}{r} 9558 \\ - 6519 \\ \hline 3039 \end{array}$ (4)	$\begin{array}{r} 5263 \\ - 3242 \\ \hline 2021 \end{array}$ (4)	$\begin{array}{r} 9703 \\ 528 \\ 6287 \\ + 143 \\ \hline 16661 \end{array}$ (5)	$\begin{array}{r} 22 \\ \times 7 \\ \hline 154 \end{array}$ (3)	$\begin{array}{r} 195 \\ + 245 \\ \hline 440 \end{array}$ (3)	21
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## Practice Exercise 5 Scoring Answers for ANSWER ONLY

Student Name: Elizabeth

$$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 8253 \\ 9642 \\ + 7257 \\ \hline 25152 \end{array}$$

$$\begin{array}{r} 963 \\ + 72 \\ \hline 1035 \end{array}$$

$$\begin{array}{r} 8807 \\ 1344 \\ + 6102 \\ \hline 16253 \end{array}$$

$$\begin{array}{r} 64 \\ + 144 \\ \hline 208 \end{array}$$

$$\begin{array}{r} 9 \\ 6 \overline{)54} \end{array}$$

19

$$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \end{array}$$

$$2 \overline{)766}$$

$$\begin{array}{r} 7957 \\ 4983 \\ + 5734 \\ \hline 18574 \end{array}$$

$$\begin{array}{r} 85 \\ \times 9 \\ \hline 765 \end{array}$$

$$\begin{array}{r} 9 \\ 3 \overline{)27} \end{array}$$

$$\begin{array}{r} 523 \\ + 87 \\ \hline 610 \end{array}$$

16

$$\begin{array}{r} 12 \\ \times 7 \\ \hline 84 \end{array}$$

$$\begin{array}{r} 9558 \\ - 6519 \\ \hline 3039 \end{array}$$

$$\begin{array}{r} 5263 \\ - 3242 \\ \hline \end{array}$$

$$\begin{array}{r} 9703 \\ 528 \\ 6287 \\ + 143 \\ \hline \end{array}$$

$$\begin{array}{r} 22 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 195 \\ + 245 \\ \hline \end{array}$$

6

41 CD

# Practice Exercise 6: Score for ANSWER ONLY

Student Name: Maggie

$$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 11 \\ 8253 \\ + 9642 \\ + 7257 \\ \hline 25152 \end{array}$$

$$\begin{array}{r} 1 \\ 963 \\ + 72 \\ \hline 1035 \end{array}$$

$$\begin{array}{r} 11 \\ 8807 \\ 1344 \\ + 6102 \\ \hline 16253 \end{array}$$

$$\begin{array}{r} 164 \\ + 144 \\ \hline 208 \end{array}$$

$$\begin{array}{r} 9 \\ 6 \overline{)54} \end{array}$$

$$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \end{array}$$

$$\begin{array}{r} 383 \\ 2 \overline{)766} \end{array}$$

$$\begin{array}{r} 211 \\ 7957 \\ 4983 \\ + 5734 \\ \hline 18674 \end{array}$$

$$\begin{array}{r} 4 \\ 85 \\ \times 9 \\ \hline 765 \end{array}$$

$$\begin{array}{r} 9 \\ 3 \overline{)27} \end{array}$$

$$\begin{array}{r} 11 \\ 523 \\ + 87 \\ \hline 610 \end{array}$$

$$\begin{array}{r} 12 \\ \times 7 \\ \hline 68 \end{array}$$

$$\begin{array}{r} 4 \\ 9558 \\ - 6519 \\ \hline 3039 \end{array}$$

$$\begin{array}{r} 5263 \\ - 3242 \\ \hline 2021 \end{array}$$

$$\begin{array}{r} 12 \\ 9703 \\ 528 \\ 6287 \\ + 143 \\ \hline 10661 \end{array}$$

$$\begin{array}{r} 1 \\ 22 \\ \times 7 \\ \hline 154 \end{array}$$

$$\begin{array}{r} 11 \\ 195 \\ + 245 \\ \hline 440 \end{array}$$

$$\begin{array}{r} 10 \\ \times 7 \\ \hline 70 \end{array}$$

$$\begin{array}{r} 11 \\ 545 \\ + 56 \\ \hline 601 \end{array}$$

$$\begin{array}{r} 4 \\ \times 5 \\ \hline 20 \end{array}$$

$$\begin{array}{r} 2 \\ \times 8 \\ \hline 16 \end{array}$$

$$\begin{array}{r} 8 \\ 9246 \\ - 8804 \\ \hline 0442 \end{array}$$

$$\begin{array}{r} 71 \\ \times 6 \\ \hline 426 \end{array}$$

$$\begin{array}{r} 4396 \\ - 3724 \\ \hline \end{array}$$

$$\begin{array}{r} 303 \\ \times 0 \\ \hline 000 \end{array}$$

$$\begin{array}{r} 10 \\ \times 14 \\ \hline 40 \\ 100 \\ \hline 140 \end{array}$$

$$\begin{array}{r} 122 \\ 3078 \\ 412 \\ 3394 \\ + 6596 \\ \hline 13480 \end{array}$$

$$\begin{array}{r} 070r1 \\ 5 \overline{)351} \end{array}$$

$$\begin{array}{r} 2 \\ 13 \\ \times 8 \\ \hline 104 \end{array}$$



## Practice Exercise 6 Scoring Key for ANSWER ONLY

### AIMSweb® M-CBM Computation #4 - Grade 5

$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$ (1)	$\begin{array}{r} 8253 \\ 9642 \\ + 7257 \\ \hline 25152 \end{array}$ (5)	$\begin{array}{r} 963 \\ + 72 \\ \hline 1035 \end{array}$ (4)	$\begin{array}{r} 8807 \\ 1344 \\ + 6102 \\ \hline 16253 \end{array}$ (5)	$\begin{array}{r} 64 \\ + 144 \\ \hline 208 \end{array}$ (3)	$\begin{array}{r} 9 \\ 6 \overline{)54} \\ \hline \end{array}$ (1)	19
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$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \end{array}$ (5)	$\begin{array}{r} 383 \\ 2 \overline{)766} \\ \hline \end{array}$ (3)	$\begin{array}{r} 7957 \\ 4983 \\ + 5734 \\ \hline 18674 \end{array}$ (5)	$\begin{array}{r} 85 \\ \times 9 \\ \hline 765 \end{array}$ (3)	$\begin{array}{r} 9 \\ 3 \overline{)27} \\ \hline \end{array}$ (1)	$\begin{array}{r} 523 \\ + 87 \\ \hline 610 \end{array}$ (3)	20
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$\begin{array}{r} 12 \\ \times 7 \\ \hline 84 \end{array}$ (2)	$\begin{array}{r} 9558 \\ - 6519 \\ \hline 3039 \end{array}$ (4)	$\begin{array}{r} 5263 \\ - 3242 \\ \hline 2021 \end{array}$ (4)	$\begin{array}{r} 9703 \\ 528 \\ 6287 \\ + 143 \\ \hline 16661 \end{array}$ (5)	$\begin{array}{r} 22 \\ \times 7 \\ \hline 154 \end{array}$ (3)	$\begin{array}{r} 195 \\ + 245 \\ \hline 440 \end{array}$ (3)	21
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$\begin{array}{r} 10 \\ \times 7 \\ \hline 70 \end{array}$ (2)	$\begin{array}{r} 545 \\ + 56 \\ \hline 601 \end{array}$ (3)	$\begin{array}{r} 4 \\ \times 5 \\ \hline 20 \end{array}$ (2)	$\begin{array}{r} 2 \\ \times 8 \\ \hline 16 \end{array}$ (2)	$\begin{array}{r} 9246 \\ - 8804 \\ \hline 442 \end{array}$ (3)	$\begin{array}{r} 71 \\ \times 6 \\ \hline 426 \end{array}$ (3)	15
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$\begin{array}{r} 4396 \\ - 3724 \\ \hline 672 \end{array}$ (3)	$\begin{array}{r} 303 \\ \times 0 \\ \hline 0 \end{array}$ (1)	$\begin{array}{r} 10 \\ \times 14 \\ \hline 140 \end{array}$ (3)	$\begin{array}{r} 3078 \\ 412 \\ 3394 \\ + 6596 \\ \hline 13480 \end{array}$ (5)	$\begin{array}{r} 70 \text{ r } 1 \\ 5 \overline{)351} \\ \hline \end{array}$ (3)	$\begin{array}{r} 13 \\ \times 8 \\ \hline 104 \end{array}$ (3)	18
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## Practice Exercise 6 Scoring Answers for ANSWER ONLY

Student Name: Maggie

$$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 11 \\ 8253 \\ 9642 \\ + 7257 \\ \hline 25152 \end{array}$$

$$\begin{array}{r} 1 \\ 963 \\ + 72 \\ \hline 1035 \end{array}$$

$$\begin{array}{r} 1 \\ 8807 \\ 1344 \\ + 6102 \\ \hline 16253 \end{array}$$

$$\begin{array}{r} 164 \\ + 144 \\ \hline 208 \end{array}$$

$$\begin{array}{r} 9 \\ 6 \overline{) 54} \\ \hline 19 \end{array}$$

$$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \end{array}$$

$$\begin{array}{r} 383 \\ 2 \overline{) 766} \\ \hline \end{array}$$

$$\begin{array}{r} 211 \\ 7957 \\ 4983 \\ + 5734 \\ \hline 18674 \end{array}$$

$$\begin{array}{r} 4 \\ 85 \\ \times 9 \\ \hline 765 \end{array}$$

$$\begin{array}{r} 9 \\ 3 \overline{) 27} \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ 523 \\ + 87 \\ \hline 610 \end{array} \quad 20$$

$$\begin{array}{r} 12 \\ \times 7 \\ \hline 108 \end{array}$$

$$\begin{array}{r} 4 \\ 9558 \\ - 6519 \\ \hline 3039 \end{array}$$

$$\begin{array}{r} 5263 \\ - 3242 \\ \hline 2021 \end{array}$$

$$\begin{array}{r} 12 \\ 9703 \\ 528 \\ 6287 \\ + 143 \\ \hline 16661 \end{array}$$

$$\begin{array}{r} 1 \\ 22 \\ \times 7 \\ \hline 154 \end{array}$$

$$\begin{array}{r} 11 \\ 195 \\ + 245 \\ \hline 440 \end{array} \quad 19$$

$$\begin{array}{r} 10 \\ \times 7 \\ \hline 70 \end{array}$$

$$\begin{array}{r} 11 \\ 545 \\ + 56 \\ \hline 601 \end{array}$$

$$\begin{array}{r} 4 \\ \times 5 \\ \hline 20 \end{array}$$

$$\begin{array}{r} 2 \\ \times 8 \\ \hline 16 \end{array}$$

$$\begin{array}{r} 8 \\ 9246 \\ - 8804 \\ \hline 0442 \end{array}$$

$$\begin{array}{r} 71 \\ \times 6 \\ \hline 426 \end{array} \quad 15$$

$$\begin{array}{r} 4396 \\ - 3724 \\ \hline \end{array}$$

$$\begin{array}{r} 303 \\ \times 0 \\ \hline 000 \end{array}$$

$$\begin{array}{r} 10 \\ \times 14 \\ \hline 40 \\ 100 \\ \hline 140 \end{array}$$

$$\begin{array}{r} 122 \\ 3078 \\ 412 \\ 3394 \\ + 6596 \\ \hline 13480 \end{array}$$

$$\begin{array}{r} 0701 \\ 5 \overline{) 351} \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ 13 \\ \times 8 \\ \hline 104 \end{array} \quad 15$$

88CD

## Practice Exercise 7: Score for ANSWER AND CRITICAL PROCESSES

Student Name: Maggie

$$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 11 \\ 8253 \\ + 7257 \\ \hline 25152 \end{array}$$

$$\begin{array}{r} 1 \\ 963 \\ + 72 \\ \hline 1035 \end{array}$$

$$\begin{array}{r} 11 \\ 8807 \\ 1344 \\ + 6102 \\ \hline 16253 \end{array}$$

$$\begin{array}{r} 164 \\ + 144 \\ \hline 208 \end{array}$$

$$\begin{array}{r} 9 \\ 6 \overline{)54} \end{array}$$

$$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \end{array}$$

$$\begin{array}{r} 383 \\ 2 \overline{)766} \end{array}$$

$$\begin{array}{r} 211 \\ 7957 \\ 4983 \\ + 5734 \\ \hline 18674 \end{array}$$

$$\begin{array}{r} 4 \\ 85 \\ \times 9 \\ \hline 765 \end{array}$$

$$\begin{array}{r} 9 \\ 3 \overline{)27} \end{array}$$

$$\begin{array}{r} 11 \\ 523 \\ + 87 \\ \hline 610 \end{array}$$

$$\begin{array}{r} 12 \\ \times 7 \\ \hline 68 \end{array}$$

$$\begin{array}{r} 4 \\ 9558 \\ - 6519 \\ \hline 3039 \end{array}$$

$$\begin{array}{r} 5263 \\ - 3242 \\ \hline 2021 \end{array}$$

$$\begin{array}{r} 12 \\ 9703 \\ 528 \\ 6287 \\ + 143 \\ \hline 16661 \end{array}$$

$$\begin{array}{r} 1 \\ 22 \\ \times 7 \\ \hline 154 \end{array}$$

$$\begin{array}{r} 11 \\ 195 \\ + 245 \\ \hline 440 \end{array}$$

$$\begin{array}{r} 10 \\ \times 7 \\ \hline 70 \end{array}$$

$$\begin{array}{r} 11 \\ 545 \\ + 56 \\ \hline 601 \end{array}$$

$$\begin{array}{r} 4 \\ \times 5 \\ \hline 20 \end{array}$$

$$\begin{array}{r} 2 \\ \times 8 \\ \hline 16 \end{array}$$

$$\begin{array}{r} 8 \\ 9246 \\ - 8804 \\ \hline 0442 \end{array}$$

$$\begin{array}{r} 71 \\ \times 6 \\ \hline 426 \end{array}$$

$$\begin{array}{r} 4396 \\ - 3724 \\ \hline \end{array}$$

$$\begin{array}{r} 303 \\ \times 0 \\ \hline 000 \end{array}$$

$$\begin{array}{r} 10 \\ \times 14 \\ \hline 40 \\ 100 \\ \hline 140 \end{array}$$

$$\begin{array}{r} 122 \\ 3078 \\ 412 \\ 3394 \\ + 6596 \\ \hline 13480 \end{array}$$

$$\begin{array}{r} 070r1 \\ 5 \overline{)351} \end{array}$$

$$\begin{array}{r} 2 \\ 13 \\ \times 8 \\ \hline 104 \end{array}$$

## Practice Exercise 7 Scoring Key for ANSWER AND CRITICAL PROCESSES

### AIMSweb® M-CBM Computation #4 - Grade 5

$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$ <p>(1)</p>	$\begin{array}{r} 8253 \\ 9642 \\ + 7257 \\ \hline 25152 \end{array}$ <p>(5)</p>	$\begin{array}{r} 963 \\ + 72 \\ \hline 1035 \end{array}$ <p>(4)</p>	$\begin{array}{r} 8807 \\ 1344 \\ + 6102 \\ \hline 16253 \end{array}$ <p>(5)</p>	$\begin{array}{r} 64 \\ + 144 \\ \hline 208 \end{array}$ <p>(3)</p>	$\begin{array}{r} 9 \\ 6 \overline{)54} \\ \hline \end{array}$ <p>(1)</p>	19
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$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \end{array}$ <p>(5)</p>	$\begin{array}{r} 383 \\ 2 \overline{)766} \\ \hline 6 \\ 16 \\ \hline 16 \\ 06 \\ \hline 6 \\ 0 \\ \hline \end{array}$ <p>(12)</p>	$\begin{array}{r} 7957 \\ 4983 \\ + 5734 \\ \hline 18674 \end{array}$ <p>(5)</p>	$\begin{array}{r} 85 \\ \times 9 \\ \hline 765 \end{array}$ <p>(3)</p>	$\begin{array}{r} 9 \\ 3 \overline{)27} \\ \hline \end{array}$ <p>(1)</p>	$\begin{array}{r} 523 \\ + 87 \\ \hline 610 \end{array}$ <p>(3)</p>	29
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$\begin{array}{r} 12 \\ \times 7 \\ \hline 84 \end{array}$ <p>(2)</p>	$\begin{array}{r} 9558 \\ - 6519 \\ \hline 3039 \end{array}$ <p>(4)</p>	$\begin{array}{r} 5263 \\ - 3242 \\ \hline 2021 \end{array}$ <p>(4)</p>	$\begin{array}{r} 9703 \\ 528 \\ 6287 \\ + 143 \\ \hline 16661 \end{array}$ <p>(5)</p>	$\begin{array}{r} 22 \\ \times 7 \\ \hline 154 \end{array}$ <p>(3)</p>	$\begin{array}{r} 195 \\ + 245 \\ \hline 440 \end{array}$ <p>(3)</p>	21
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$\begin{array}{r} 10 \\ \times 7 \\ \hline 70 \end{array}$ <p>(2)</p>	$\begin{array}{r} 545 \\ + 56 \\ \hline 601 \end{array}$ <p>(3)</p>	$\begin{array}{r} 4 \\ \times 5 \\ \hline 20 \end{array}$ <p>(2)</p>	$\begin{array}{r} 2 \\ \times 8 \\ \hline 16 \end{array}$ <p>(2)</p>	$\begin{array}{r} 9246 \\ - 8804 \\ \hline 442 \end{array}$ <p>(3)</p>	$\begin{array}{r} 71 \\ \times 6 \\ \hline 426 \end{array}$ <p>(3)</p>	15
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$\begin{array}{r} 4396 \\ - 3724 \\ \hline 672 \end{array}$ <p>(3)</p>	$\begin{array}{r} 303 \\ \times 0 \\ \hline 0 \end{array}$ <p>(1)</p>	$\begin{array}{r} 10 \\ \times 14 \\ \hline 40 \\ 10 \\ \hline 140 \end{array}$ <p>(7)</p>	$\begin{array}{r} 3078 \\ 412 \\ 3394 \\ + 6596 \\ \hline 13480 \end{array}$ <p>(5)</p>	$\begin{array}{r} 70 \text{ r } 1 \\ 5 \overline{)351} \\ \hline 35 \\ 01 \end{array}$ <p>(7)</p>	$\begin{array}{r} 13 \\ \times 8 \\ \hline 104 \end{array}$ <p>(3)</p>	26
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# Practice Exercise 7 Scoring Answers for ANSWER AND CRITICAL PROCESSES

Student Name: Maggie

$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$	$\begin{array}{r} 11 \\ 8253 \\ + 9642 \\ + 7257 \\ \hline 25152 \end{array}$	$\begin{array}{r} 1 \\ 963 \\ + 72 \\ \hline 1035 \end{array}$	$\begin{array}{r} 11 \\ 8807 \\ 1344 \\ + 6102 \\ \hline 16253 \end{array}$	$\begin{array}{r} 164 \\ + 144 \\ \hline 208 \end{array}$	$\begin{array}{r} 9 \\ 6 \overline{)54} \\ \hline 19 \end{array}$
$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \end{array}$	$\begin{array}{r} 383^C \\ 2 \overline{)766} \\ \hline 12 \end{array}$	$\begin{array}{r} 211 \\ 7957 \\ 4983 \\ + 5734 \\ \hline 18674 \end{array}$	$\begin{array}{r} 4 \\ 85 \\ \times 9 \\ \hline 765 \end{array}$	$\begin{array}{r} 9 \\ 3 \overline{)27} \\ \hline - \end{array}$	$\begin{array}{r} 11 \\ 523 \\ + 87 \\ \hline 610 \end{array} \quad 29$
$\begin{array}{r} 12 \\ \times 7 \\ \hline 63 \end{array}$	$\begin{array}{r} 4 \\ 9588 \\ - 6519 \\ \hline 3069 \end{array}$	$\begin{array}{r} 5263 \\ - 3242 \\ \hline 2021 \end{array}$	$\begin{array}{r} 12 \\ 9703 \\ 528 \\ 6287 \\ + 143 \\ \hline 10461 \end{array}$	$\begin{array}{r} 1 \\ 22 \\ \times 7 \\ \hline 154 \end{array}$	$\begin{array}{r} 11 \\ 195 \\ + 245 \\ \hline 440 \end{array} \quad 19$
$\begin{array}{r} 10 \\ \times 7 \\ \hline 70 \end{array}$	$\begin{array}{r} 11 \\ 545 \\ + 56 \\ \hline 601 \end{array}$	$\begin{array}{r} 4 \\ \times 5 \\ \hline 20 \end{array}$	$\begin{array}{r} 2 \\ \times 8 \\ \hline 16 \end{array}$	$\begin{array}{r} 8 \\ 9246 \\ - 8804 \\ \hline 0442 \end{array}$	$\begin{array}{r} 71 \\ \times 6 \\ \hline 426 \end{array} \quad 15$
$\begin{array}{r} 4396 \\ - 3724 \\ \hline \end{array}$	$\begin{array}{r} 303 \\ \times 0 \\ \hline 000 \end{array}$	$\begin{array}{r} 10^C \\ \times 14 \\ \hline 140 \\ 100 \\ \hline 140 \\ 7 \end{array}$	$\begin{array}{r} 122 \\ 3078 \\ 412 \\ 3394 \\ + 6596 \\ \hline 13480 \end{array}$	$\begin{array}{r} 071^C \\ 5 \overline{)351} \\ \hline 7 \end{array}$	$\begin{array}{r} 2 \\ 13 \\ \times 8 \\ \hline 104 \end{array} \quad 23$
					$\begin{array}{r} 105 \end{array}$

## Practice Exercise 8: Score for ANSWER ONLY

Student Name: Peter

$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$	$\begin{array}{r} 111 \\ 8253 \\ 9642 \\ + 7257 \\ \hline 25152 \end{array}$	$\begin{array}{r} 963 \\ + 72 \\ \hline 1035 \end{array}$	$\begin{array}{r} 8807 \\ 1344 \\ + 6102 \\ \hline \end{array}$	$\begin{array}{r} 164 \\ + 144 \\ \hline 208 \end{array}$	$\begin{array}{r} 6 \overline{)54} \\ 9 \end{array}$
$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \end{array}$	$\begin{array}{r} 2 \overline{)766} \\ 383 \end{array}$	$\begin{array}{r} 211 \\ 7957 \\ 4983 \\ + 5734 \\ \hline 18644 \end{array}$	$\begin{array}{r} 85 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 3 \overline{)27} \\ 9 \end{array}$	$\begin{array}{r} 1 \\ 523 \\ + 87 \\ \hline 610 \end{array}$

## Practice Exercise 8 Scoring Key for ANSWER ONLY

AIMSweb® M-CBM Computation #4 - Grade 5

$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \\ (1) \end{array}$	$\begin{array}{r} 8253 \\ 9642 \\ + 7257 \\ \hline 25152 \\ (5) \end{array}$	$\begin{array}{r} 963 \\ + 72 \\ \hline 1035 \\ (4) \end{array}$	$\begin{array}{r} 8807 \\ 1344 \\ + 6102 \\ \hline 16253 \\ (5) \end{array}$	$\begin{array}{r} 64 \\ + 144 \\ \hline 208 \\ (3) \end{array}$	$\begin{array}{r} 9 \\ 6 \overline{)54} \\ (1) \end{array}$	19
$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \\ (5) \end{array}$	$\begin{array}{r} 383 \\ 2 \overline{)766} \\ (3) \end{array}$	$\begin{array}{r} 7957 \\ 4983 \\ + 5734 \\ \hline 18674 \\ (5) \end{array}$	$\begin{array}{r} 85 \\ \times 9 \\ \hline 765 \\ (3) \end{array}$	$\begin{array}{r} 9 \\ 3 \overline{)27} \\ (1) \end{array}$	$\begin{array}{r} 523 \\ + 87 \\ \hline 610 \\ (3) \end{array}$	20

## Practice Exercise 8 Scoring Answers for ANSWER ONLY

Student Name: Peter

$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$	$\begin{array}{r} 111 \\ 8253 \\ 9642 \\ + 7257 \\ \hline 25152 \end{array}$	$\begin{array}{r} 963 \\ + 72 \\ \hline 1035 \end{array}$	$\begin{array}{r} 8807 \\ 1344 \\ + 6102 \\ \hline \end{array}$	$\begin{array}{r} 164 \\ + 144 \\ \hline 208 \end{array}$	$\begin{array}{r} 6 \overline{)54} \\ 9 \\ \hline \end{array}$	14
$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \end{array}$	$\begin{array}{r} 2 \overline{)766} \\ 383 \end{array}$	$\begin{array}{r} 211 \\ 7957 \\ 4983 \\ + 5734 \\ \hline 18644 \end{array}$	$\begin{array}{r} 85 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 3 \overline{)27} \\ 9 \end{array}$	$\begin{array}{r} 1 \\ 523 \\ + 87 \\ \hline 610 \end{array}$	16
					30CD	

## Practice Exercise 9: Score for ANSWER AND CRITICAL PROCESSES

Student Name: Peter

$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$	$\begin{array}{r} 11 \\ 8253 \\ 9642 \\ + 7257 \\ \hline 25152 \end{array}$	$\begin{array}{r} 963 \\ + 72 \\ \hline 1035 \end{array}$	$\begin{array}{r} 8807 \\ 1344 \\ + 6102 \\ \hline \end{array}$	$\begin{array}{r} 164 \\ + 144 \\ \hline 208 \end{array}$	$\begin{array}{r} 6 \overline{)54} \\ 9 \end{array}$
$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \end{array}$	$\begin{array}{r} 2 \overline{)766} \\ 383 \end{array}$	$\begin{array}{r} 211 \\ 7957 \\ 4983 \\ + 5734 \\ \hline 18644 \end{array}$	$\begin{array}{r} 85 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 3 \overline{)27} \\ 9 \end{array}$	$\begin{array}{r} 1 \\ 523 \\ + 87 \\ \hline 610 \end{array}$

## Practice Exercise 9 Scoring Key for ANSWER AND CRITICAL PROCESSES

AIMSweb® M-CBM Computation #4 - Grade 5

$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \\ (1) \end{array}$	$\begin{array}{r} 8253 \\ 9642 \\ + 7257 \\ \hline 25152 \\ (5) \end{array}$	$\begin{array}{r} 963 \\ + 72 \\ \hline 1035 \\ (4) \end{array}$	$\begin{array}{r} 8807 \\ 1344 \\ + 6102 \\ \hline 16253 \\ (5) \end{array}$	$\begin{array}{r} 64 \\ + 144 \\ \hline 208 \\ (3) \end{array}$	$\begin{array}{r} 9 \\ 6 \overline{)54} \\ (1) \end{array}$	19
$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \\ (5) \end{array}$	$\begin{array}{r} 383 \\ 2 \overline{)766} \\ 6 \\ \hline 16 \\ 16 \\ \hline 06 \\ 6 \\ \hline 0 \\ (12) \end{array}$	$\begin{array}{r} 7957 \\ 4983 \\ + 5734 \\ \hline 18674 \\ (5) \end{array}$	$\begin{array}{r} 85 \\ \times 9 \\ \hline 765 \\ (3) \end{array}$	$\begin{array}{r} 9 \\ 3 \overline{)27} \\ (1) \end{array}$	$\begin{array}{r} 523 \\ + 87 \\ \hline 610 \\ (3) \end{array}$	29



## Practice Exercise 9 Scoring Answers for ANSWER AND CRITICAL PROCESSES

Student Name: Peter

$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \\ \hline \end{array}$	$\begin{array}{r} 111 \\ 8253 \\ + 7257 \\ \hline 25152 \end{array}$	$\begin{array}{r} 963 \\ + 72 \\ \hline 1035 \end{array}$	$\begin{array}{r} 8807 \\ 1344 \\ + 6102 \\ \hline \end{array}$	$\begin{array}{r} 164 \\ + 144 \\ \hline 208 \end{array}$	$\begin{array}{r} 6 \overline{)54} \\ 9 \quad 14 \\ \hline \end{array}$
$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \end{array}$	$\begin{array}{r} 12 \\ 2 \overline{)766} \\ 383 \end{array}$	$\begin{array}{r} 211 \\ 7957 \\ 4983 \\ + 5734 \\ \hline 18644 \end{array}$	$\begin{array}{r} 85 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 3 \overline{)27} \\ 9 \end{array}$	$\begin{array}{r} 1 \\ 523 \\ + 87 \\ \hline 610 \end{array}$

**(39CD)**

## Practice Exercise 10: Score for ANSWER ONLY

Student Name: Alex

$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$	$\begin{array}{r} 8253 \\ 9642 \\ + 7257 \\ \hline \end{array}$	$\begin{array}{r} 963 \\ + 72 \\ \hline 1,035 \end{array}$	$\begin{array}{r} 8807 \\ 1344 \\ + 6102 \\ \hline \end{array}$	$\begin{array}{r} 64 \\ + 144 \\ \hline 208 \end{array}$	$\begin{array}{r} 9 \\ 6 \overline{)54} \end{array}$
--	---	--	---	--	--

$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11,467 \end{array}$	$\begin{array}{r} 333 \\ 2 \overline{)766} \end{array}$	$\begin{array}{r} 7957 \\ 4983 \\ + 5734 \\ \hline \end{array}$	$\begin{array}{r} 85 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 3 \overline{)27} \end{array}$	$\begin{array}{r} 11 \\ 523 \\ + 87 \\ \hline 610 \end{array}$
--	---	---	---	--	--

$\begin{array}{r} 12 \\ \times 7 \\ \hline 84 \end{array}$	$\begin{array}{r} 4 \\ 95584 \\ - 6519 \\ \hline 3,035 \end{array}$	$\begin{array}{r} 5263 \\ - 3242 \\ \hline 1 \end{array}$	$\begin{array}{r} 9703 \\ 528 \\ 6287 \\ + 143 \\ \hline \end{array}$	$\begin{array}{r} 22 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 195 \\ + 245 \\ \hline \end{array}$
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## Practice Exercise 10 Scoring Key for ANSWER ONLY

AIMSweb® M-CBM Computation #4 - Grade 5						
$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$ <p>(1)</p>	$\begin{array}{r} 8253 \\ 9642 \\ + 7257 \\ \hline 25152 \end{array}$ <p>(5)</p>	$\begin{array}{r} 963 \\ + 72 \\ \hline 1035 \end{array}$ <p>(4)</p>	$\begin{array}{r} 8807 \\ 1344 \\ + 6102 \\ \hline 16253 \end{array}$ <p>(5)</p>	$\begin{array}{r} 64 \\ + 144 \\ \hline 208 \end{array}$ <p>(3)</p>	$\begin{array}{r} 9 \\ 6 \overline{)54} \\ (1) \end{array}$	19
$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \end{array}$ <p>(5)</p>	$\begin{array}{r} 383 \\ 2 \overline{)766} \\ (3) \end{array}$	$\begin{array}{r} 7957 \\ 4983 \\ + 5734 \\ \hline 18674 \end{array}$ <p>(5)</p>	$\begin{array}{r} 85 \\ \times 9 \\ \hline 765 \end{array}$ <p>(3)</p>	$\begin{array}{r} 9 \\ 3 \overline{)27} \\ (1) \end{array}$	$\begin{array}{r} 523 \\ + 87 \\ \hline 610 \end{array}$ <p>(3)</p>	20
$\begin{array}{r} 12 \\ \times 7 \\ \hline 84 \end{array}$ <p>(2)</p>	$\begin{array}{r} 9558 \\ - 6519 \\ \hline 3039 \end{array}$ <p>(4)</p>	$\begin{array}{r} 5263 \\ - 3242 \\ \hline 2021 \end{array}$ <p>(4)</p>	$\begin{array}{r} 9703 \\ 528 \\ 6287 \\ + 143 \\ \hline 16661 \end{array}$ <p>(5)</p>	$\begin{array}{r} 22 \\ \times 7 \\ \hline 154 \end{array}$ <p>(3)</p>	$\begin{array}{r} 195 \\ + 245 \\ \hline 440 \end{array}$ <p>(3)</p>	21

## Practice Exercise 10 Scoring Answers for ANSWER ONLY

Student Name: Alex

$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$	$\begin{array}{r} 8253 \\ 9642 \\ + 7257 \\ \hline \end{array}$	$\begin{array}{r} 963 \\ + 72 \\ \hline 1,035 \end{array}$	$\begin{array}{r} 8807 \\ 1344 \\ + 6102 \\ \hline \end{array}$	$\begin{array}{r} 64 \\ + 144 \\ \hline 208 \end{array}$	$\begin{array}{r} 9 \\ 6 \overline{)54} \end{array} \quad 9$
$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11,467 \end{array}$	$\begin{array}{r} 333 \\ 2 \overline{)766} \end{array}$	$\begin{array}{r} 7957 \\ 4983 \\ + 5734 \\ \hline \end{array}$	$\begin{array}{r} 85 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 3 \overline{)27} \end{array}$	$\begin{array}{r} 11 \\ 523 \\ + 87 \\ \hline 610 \end{array} \quad 11$
$\begin{array}{r} 12 \\ \times 7 \\ \hline 84 \end{array}$	$\begin{array}{r} 44 \\ 9558 \\ - 6519 \\ \hline 3,035 \end{array}$	$\begin{array}{r} 5263 \\ - 3242 \\ \hline 1 \end{array}$	$\begin{array}{r} 9703 \\ 528 \\ 6287 \\ + 143 \\ \hline \end{array}$	$\begin{array}{r} 22 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 195 \\ + 245 \\ \hline \end{array} \quad 6$
					$\textcircled{26CD}$

# Appendix C

## Summary of Reliability & Validity Studies

# Summary of Reliability and Validity Studies

## Summary of Math-CBM Reliability Studies

Study	Subjects	Type of Reliability	M-CBM	Add	Sub	Mult	Di
Fuchs, Fuchs, & Hamlett (1988)	46 LD, 2 EMR, 14 SED students, grades 3-9	Internal consistency: Cronbach's alpha Interscorer agreement on 30% of protocols	.93	-	-	-	-
			.93	-	-	-	-
Tindel, Germann et al., 1983	30 regular education 5th graders	Test-retest (1 week)	.93	.87	.89	.79	.78
Tindel, Germann et al., 1983	30 regular education 4th graders	2 parallel forms at the same time	-	.72	.70	.61	.48
Tindel, Germann et al., 1983	76 regular education 4th and 5th graders	Interscore agreement	.93	.98	.99	.90	.95
Thurber & Shinn, 2002	207 regular education students, grade 4	Interscorer agreement	.83	-	-	-	-
		Alternate Form	.91	-	-	-	-